


89
-507

GOVT



Digitized by the Internet Archive
in 2024 with funding from
University of Toronto

89-507

Canada's Industries: Growth in Jobs over Three Decades

A Review of the Changing
Industrial Mix of Employment
1951-1984

W. Garnett Picot

Canada

Data in Many Forms . . .

Statistics Canada disseminates data in a variety of forms. In addition to publications, both standard and special tabulations are offered on computer printouts, microfiche and microfilm, and magnetic tapes. Maps and other geographic reference materials are available for some types of data. Direct access to aggregated information is possible through CANSIM, Statistics Canada's machine-readable data base and retrieval system.

How to Obtain More Information

Inquiries about this publication and related statistics or services should be directed to:

Social and Economic Studies Division

Statistics Canada, Ottawa, K1A 0T6 (Telephone: 990-8213) or to the Statistics Canada reference centre in:

St. John's	(772-4073)	Sturgeon Falls	(753-4888)
Halifax	(426-5331)	Winnipeg	(949-4020)
Montréal	(283-5725)	Regina	(359-5405)
Ottawa	(990-8116)	Edmonton	(420-3027)
Toronto	(973-6586)	Vancouver	(666-3691)

Toll-free access is provided in all provinces and territories, **for users who reside outside the local dialing area** of any of the regional reference centres.

Newfoundland and Labrador	Zenith 0-7037
Nova Scotia, New Brunswick and Prince Edward Island	1-800-565-7192
Quebec	1-800-361-2831
Ontario	1-800-268-1151
Manitoba	1-800-282-8006
Saskatchewan	1(112)800-667-3524
Alberta	1-800-222-6400
British Columbia (South and Central)	112-800-663-1551
Yukon and Northern B.C. (area served by Northwestel Inc.)	Zenith 0-8913
Northwest Territories (area served by Northwestel Inc.)	Call collect 420-2011

How to Order Publications

This and other Statistics Canada publications may be purchased from local authorized agents and other community bookstores, through the local Statistics Canada offices, or by mail order to Publication Sales and Services, Statistics Canada, Ottawa, K1A 0T6.

1(613)993-7276

Toronto

Credit card only (973-8018)

Canada's Industries: Growth in Jobs over Three Decades

A Review of the Changing
Industrial Mix of Employment
1951-1984

W. Garnett Picot

Published under the authority of
the Minister of Supply and Services Canada

© Minister of Supply
and Services Canada 1986

February 1986
8-7000-509

Price: Canada, \$18.00
Other Countries, \$19.00

Payment to be made in Canadian funds or equivalent

Catalogue 89-507E

ISBN 0-660-11909-9

Ottawa

Version française de cette publication disponible
sur demande (n° 89-507F au catalogue)

PREFACE

The interest in employment and job creation trends has been heightened recently for two reasons. First, the 1981-82 recession had a substantial effect on employment in many industries, with complete recovery still not yet achieved in some. Second, there are always long-term structural processes at work, such as the absorption of new technologies and changes in long-term patterns of trade and domestic demand. These processes affect industrial employment levels in varying degrees, depending upon the industry and time period. Such structural processes have had a major influence on the industrial structure of employment over the past thirty-three years, as indicated by the shift in employment, from the goods-producing sector to the service sector.

In light of these events, and to fill a perceived gap in the available information, Statistics Canada has examined long-term employment trends in different sectors of the economy. In the present study, the author attempts to stand back and identify the major patterns of industrial redistribution of employment that have occurred over the past three decades. As well, a section on the causes of the industrial restructuring of employment has been included. Technical jargon has been used as little as possible in this section, in the hope that it will appeal to the broadest possible audience. As with other analytical works produced by Statistics Canada, it is intended to contribute to a better understanding of public policy issues by providing systematic quantitative analysis of related events.

Chief Statistician
of Canada

Ivan P. Fellegi

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

INTRODUCTION	1
--------------------	---

DEFINITIONS AND DATA SOURCES	5
------------------------------------	---

SECTION 1: EMPLOYMENT TRENDS IN INDUSTRIES AND SECTORS	9
---	---

LABOUR FORCE TRENDS BETWEEN 1951 AND 1981	9
RECENT PATTERNS IN EMPLOYMENT BY INDUSTRY AND SECTOR	25

SECTION 2: WHAT CAUSES CHANGE IN THE INDUSTRIAL STRUCTURE OF EMPLOYMENT?	43
--	----

Introduction	43
Background	43

CHANGES IN DEMAND AND THE DISTRIBUTION OF EMPLOYMENT	47
---	----

Changes in Domestic Demand for Goods and Services	47
--	----

Problems in Measuring Output and Productivity	48
---	----

The Demand for Imports and Exports	51
--	----

INDUSTRY VARIATIONS IN PRODUCTIVITY AND THE CHANGING EMPLOYMENT MIX	54
--	----

The Effects of Productivity Change on Total Employment	57
---	----

Relative Importance of Changing Final Demand and Changes in Productivity	61
---	----

CLOSING COMMENTS	68
------------------------	----

SECTION 3: SUMMARY	75
1951 to 1981	75
The Post-Recession Period	77
Appendix A: DATA SOURCES	81
Data Sources and Coverage	81
Census Data as They Reflect Long-Term Trends	82
Comparison of Establishment and Household Survey Data	83
Appendix B: STATISTICAL TABLES	93
Sources	93
Detailed Sources	93
BIBLIOGRAPHY	111

LIST OF TABLES

x	1.	Increasing Share of the Labour Force in the Service Sector, 1951 to 1981	14
x	2.	Slowest and Fastest Growing Industries, 1951-1961, 1961-1971 and 1971-1981	21
x	3a.	Net Change in Employment (New Jobs Created) Between 1974 and 1982, by Firm Size and Sector (Commercial Economy) - Department of Regional Industrial Expansion Study -	29
	3b.	Net Change in Employment (New Jobs Created) Between 1978 and 1982, by Firm Size and Sector - Statistics Canada Study -	30

4.	Fastest and Slowest Growing Industries, 1976-1981 and 1981-1984	40
5.	Average Percent Change in Labour Productivity, 1951-61 to 1978-82	58
6.	Employment Change Between 1971 and 1979, by Contributors to Change, Goods-producing and Commercial Services Industries	65
A1.	EMPLOYMENT as Measured by Three Major Sources: Census, Labour Force Survey and Establishments Surveys, 1961, 1971 and 1981	85
A2.	PERCENT DISTRIBUTION OF EMPLOYMENT as Measured by Three Major Sources: Census, Labour Force Survey and Establishments Surveys, 1961, 1971 and 1981	86
A3.	PERCENT INCREASE IN EMPLOYMENT as Measured by Three Major Sources: Census, Labour Force Survey and Establishments Surveys, 1961, 1971 and 1981	87
B1.	Experienced Labour Force by INDUSTRY, 1951 to 1981	95
B2.	INDUSTRY Changes in Share and Growth Rates, Experienced Labour Force, 1951-61 to 1971-81	97
B3.	Percent of Total Expansion in the Experienced Labour Force Contributed by Each INDUSTRY, 1951-61 to 1971-81	99
B4.	Experienced Labour Force by SECTOR, 1951 to 1981 . . .	100
B5.	Changes in Share and Growth Rates of the Experienced Labour Force, by SECTOR, 1951-61 to 1971-81	101
B6.	Percent of Total Expansion in the Experienced Labour	

	Force Contributed by each SECTOR, 1951-61 to 1971-81	102
✕ B7.	Employment by INDUSTRY, 1971 to 1984	103
✕ B8.	INDUSTRY Changes in Share and Growth Rates in Employment, 1971 to 1984	105
B9.	Percent of Total Expansion in Net Employment Contributed by Each INDUSTRY, 1971-81 and 1976-81 and Change in Employment, 1981-84	106
✓ B10.	Employment by SECTOR, 1971 to 1984	107
B11.	Changes in Share and Growth Rates of Employment, by SECTOR, 1971 to 1984	108
✕ B12.	Percent of Total Expansion in Net Employment Contributed by Each SECTOR, 1971-81 and 1976-81 and Change in Employment, 1981-84	109

LIST OF CHARTS

✕ 1.	Percent of the Experienced Labour Force in the Service Sector, 1951 to 1981	11
✕ 2.	Percent of the Experienced Labour Force in the Goods-producing Sector, 1951 to 1981	11
3.	Annual Average Percent Growth in the Experienced Labour Force, Major Sectors, 1951-1961, 1961-1971 and 1971-1981	18
4.	Annual Average Percent Growth in the Experienced Labour Force, Selected Industries, 1951-1961, 1961-1971 and 1971-1981	18
5.	Percent of Total Expansion in the Experienced Labour	

	Force Contributed by Major Sectors, 1951-1961, 1961-1971 and 1971-1981	19
x 6.	Relative Growth Rates of 41 Industries, 1951-1961, 1961-1971 and 1971-1981	24
x 7.	Contribution of Net Job Creation Between 1976 and 1981, Major Sectors	27
x 8.	Annual Growth Rate of Employment, Three Major Sectors, 1976 to 1984	36
9.	Index of Employment, Three Major Sectors, 1975 to 1984	37
10.	Index of Employment, Commercial Services, 1975 to 1984	37
11.	Index of Employment, Selected Industries, 1975 to 1984	39
12.	Percent Change in Employment Between 1971 to 1979 Selected Industries	66

ACKNOWLEDGEMENTS

Marie-Claire Couture provided much appreciated assistance in compiling, manipulating and verifying the data. Mary-Sue Devereaux kindly edited the text, and Audrey Sirois, with remarkable text-processing skills, produced many drafts. The author is grateful for their assistance.

Drafts were kindly reviewed by G. Montigny, R. Carter, and K. Gill of Statistics Canada, and special thanks go to Paul Shaw of the Social and Economic Studies Division, Kim Farrell of the Labour Division and an unidentified outside reviewer for their many useful comments on an earlier version. The responsibility for the text remains, of course, with the author.

INTRODUCTION

The purpose of this report is to review employment trends in Canada's industries and the general explanations as to why they occur. The emphasis is on *long-term* trends in the changing mix of employment, using statistics dating back to 1951.

Which industries are declining? What are the growth industries to which workers will move? Before the recession, to what extent had the ability of the goods-producing sector to create jobs weakened? What is the lingering effect of the 1981-82 recession on job creation in various industries? And what are some of the major reasons for these changes? These questions are important for policy and program development, because the redistribution of employment among economic sectors and its effect on the types of jobs and skills that are in demand have implications for retraining, relocation and other labour market adjustment programs. In fact, this report is an offshoot of research undertaken for another study on adult training. Because training is one of the strategies that can be used to assist displaced workers, the "Adult Training" research entailed a review of the declining industries phenomenon, and the restructuring of industrial employment.

The emphasis in this report is employment. This is not a review of the overall growth and behavior of industries and sectors since 1951. Evidence on the overall growth and decline of industries must be derived from indicators such as gross domestic product, labour income, market share, returns on assets, requests for government protection and subsidy, and other factors, as well as employment levels. In particular, the extent to which ours has become a "service" economy depends upon whether one uses the volume of production (output) or employment in various sectors to judge the change. The often discussed shift to the services sector is much less noticeable when the former rather than the latter measure is used. This review is restricted to changes in employment levels, since it is this that has implications for labour market adjustment programs such as retraining.

The report is intended for people interested in the changing mix of employment among industries. It has *not* been written solely for the specialist, and indeed professional economists working in this area

may be aware of most of the trends referred to in the report. The report has been written to fill a perceived gap in the information available to persons interested in industrial employment trends up to 1984.

This is a difficult time to examine long-term trends in the industrial mix of employment. The Canadian economy, in particular the goods-producing sector, has not yet recovered from the devastating 1981-82 recession, which continues to influence employment levels in some sectors more than others. Short-term cyclical effects of the recession cannot be easily distinguished from long-term trends. It may be that the recession introduced, or at least accentuated, new employment patterns with a set of growing and declining industries different from those of the 1970s. But it is also possible that developments since 1981 are coloring analysts' views of long-term trends.

Much of the discussion of the extent and implications of the changing industrial mix of employment is based on comparisons of just two years' employment data, one pre- and one post-1981. Such comparisons are misleading as an indication of long-term trends. The differential effect on employment in various industries of the 1981-82 cyclical downturn, combined with uncertainty about the extent to which various industries and sectors will recover lost jobs, limit the value of post-1981 data for assessing long-term trends. But it is possible to examine longer-range employment trends up to the 1981-82 recession, and contrast these with post-1981 employment levels to put the latter in perspective. That is one objective of this report.

Another objective relates to the need to periodically review changes in the distribution of employment among industries. Studies have shown that even during expansionary periods, there is considerable "churning" in the economy, with many "births" and "deaths" of businesses. In a relatively short time, perhaps a couple of decades, the result can be a transformation of the economy. The sectors which are the leading job creators can change from one decade to another, thereby affecting the types of jobs created, the skill levels required, and the earnings the new jobs generate. For example, some researchers in the United States, where the move away from goods-sector employment has probably been faster than in Canada, are beginning to suspect that the rapidly growing sectors of the service economy

produce few "good" jobs. Kuttner (1983), Bluestone (1982) and Stanbeck (1981) argue that large numbers of jobs with low pay - such as sales clerks, waiters, secretaries and cashiers - have been created along with a few better-than-average jobs. It is the lack of middle-level (income) jobs, they argue, that is most noticeable. Others contend that this "declining middle" hypothesis has not been adequately demonstrated and is unlikely to happen. Some, such as Lawrence (1984) and Canada's Economic Council (1983) disagree with the "deindustrialization" thesis, arguing that manufacturing in the United States and Canada is in no imminent danger of vanishing.

Some widely held beliefs about changes in employment structure, notably before the recession, may well be misconceptions. For example, current concern with "structural" problems and labour adjustment programs might suggest that the redistribution (restructuring) of employment among industries has been speeding up. The movement of jobs to the service sector, the rapid increase in public employment (health, education, government), and potential problems for the manufacturing sector have received much attention. But, in fact, the pace of redistribution of jobs among industries and sectors was slowing considerably before the recession.

The extraordinary growth in public sector employment in the fifties and sixties had stopped by the early seventies. In particular, the federal government's share of total employment had been falling for many years before the recession, and its growth has remained low. The same is true for education. Specialists, of course, are aware of these developments. But among the broader audience, toward whom this review is directed, there may be some confusion about the myths and realities of long-term employment trends.

Section I of this report examines employment trends over the three decades from 1951 to 1981 and more recent data to 1984. Section II discusses some of the factors that contribute to a change in the distribution of employment among industries. It does not pretend to be an exhaustive review of the causes. Rather, it concentrates on two factors: (1) changes in demand for goods and services produced by different industries and (2) variations among industries in the rate at which their productivity has increased.

These two have been selected because they are, in a sense, catch-all factors, which, in turn, are influenced by more fundamental causes. For example, changes in the demand for various Canadian-produced goods and services are caused by other events such as changes in real income levels and variations in the income elasticity of demand among goods and services, lifestyle changes, the move toward global competition in business, changes in government policies on subsidies and tariffs, and the move to more flexible exchange rates. Thus, changing demand reflects many underlying causes. Similarly, *variations* in productivity change among industries are also the result of more fundamental differences, such as the rate of technological innovation, the methods and materials used in production, the level and rate of change in wages, the level of capital investment per employee, differences in capacity utilization, labour-management relations, and managerial skills. By discussing the changing industrial mix of employment in terms of the two broad categories, demand and productivity, a host of more fundamental causes which contribute to the change are implied, although they are not treated in detail.

Section III summarizes the major findings of Sections I and II, and two Appendices contain information on data sources, definitions, and statistical tables.

DEFINITIONS AND DATA SOURCES

Although employment data for 44 industries and sectors are used in this analysis, the discussion and analysis are often aided by aggregating these industries into larger economic sectors.

For that purpose, the economy is divided into two main components, the *goods-producing* and the *service* sector. The service sector is subdivided into *commercial* and *non-commercial* (or public) services. Commercial services, the largest sector of the economy, is further subdivided into three parts: distributive, producer, and consumer services. Non-commercial services refers to "not for-profit" organizations, which are largely financed directly by government.

Following is a list of the industries included in each sector:

- *GOODS-PRODUCING SECTOR*

agriculture, manufacturing, construction, mining/oil and gas wells, utilities, forestry and fishing (SIC 001 to 421, and 572 to 579).

- *SERVICE SECTOR*

- *Commercial Services*

- *DISTRIBUTIVE SERVICES*: transportation and storage, communication, wholesale and retail trade (SIC 501 to 548, 602 to 699).

- *CONSUMER SERVICES*: accommodation and food services, personal services, amusement and recreational services, miscellaneous services (SIC 841 to 849, 871 to 899).

- *PRODUCER SERVICES*: services to business management (e.g., accounting, engineering, legal and management consulting firms), finance, insurance and real estate (SIC 701 to 737, 851 to 869).

– *Non-Commercial Services:*

education, health and welfare services, religious organizations, public administration (government) (SIC 801 to 831, 902 to 991).

The 44 detailed industries and sectors which are often used in the analysis and for which data are reported in Appendix B, include:

1. Agriculture
2. Forestry
3. Fishing and Trapping
4. Mines, Oil and Gas Wells
5. Food and Beverage
6. Tobacco Products
7. Rubber and Plastic Products
8. Leather Industries
9. Textile Industries
10. Knitting Mills
11. Clothing Industries
12. Wood Industries
13. Furniture and Fixture
14. Paper and Allied Industries
15. Printing, Publishing and Allied Industries
16. Primary Metal
17. Metal Fabricating (except Machinery and Transportation Equipment)
18. Machinery (except Electrical Machinery)
19. Transportation Equipment
20. Electrical Products
21. Non-metallic Mineral Products
22. Petroleum, Coal, Chemical and Chemical Products
23. Misc. Manufacturing Industries
24. General Contractors
25. Special Trade Contractors
26. Transportation and Storage
27. Communication
28. Electric Power, Gas and Water Utilities
29. Wholesale Trade
30. Retail Trade

31. Financial Institutions
32. Insurance Carriers
33. Insurance and Real Estate Agencies
34. Education
35. Health and Welfare
36. Religious Organizations
37. Amusement and Recreation
38. Services to Business Management
39. Personal Services
40. Accommodation and Food
41. Miscellaneous Services
42. Federal Administration
43. Provincial Administration
44. Local Administration and Other Government Offices

For further detail and a description of these industries, readers should consult the 1970 Standard Industrial Classification Manual published by Statistics Canada, Catalogue No. 12-501, or excerpts from that manual provided in Appendix A.

Most data in this report come from household surveys - the Census and the Labour Force Survey. Another major source is establishment (or firm) surveys. Employment trends recorded by household and establishment surveys do, at times, differ. When these differences are significant, it is noted in the text. Household survey data are used because a consistent series of statistics dating back to 1951 is available at a reasonable level of detail (41 industries).

SECTION 1

EMPLOYMENT TRENDS IN INDUSTRIES AND SECTORS

This section consists of two parts. The first outlines major employment trends between 1951 and 1981. It stops at that point because the 1981-82 recession made data collected between 1982 and 1984 unusable for the analysis of long-term trends. The second part takes a closer look at patterns during the 1970s and compares them with the 1981-84 period. General observations from the data are provided as an overview of the major trends. The detailed statistics on which the observations are based are in Appendix B.

Basically, three indicators have been applied to the data. The first indicator is the *growth rate* in employment (or the experienced labour force). The second is the *share of the labour force*, which indicates the relative size of an industry or sector in the economy. A change in share of the labour force is a measure of the the pace at which an industry's importance, in terms of total jobs, is increasing or declining. The third measure is the *contribution to net employment growth*, which is a crude indication of the industrial sectors that are providing the majority of the new jobs.

LABOUR FORCE TRENDS BETWEEN 1951 AND 1981

Observation 1: The service sector's share of the labour force increased steadily from 1951 to 1981, but at a much slower pace during the 1971-81 period than in the previous decades.

The proportion of the labour force¹ in the services sector rose from 47% in 1951 to 66% in 1981 (Chart 1). This 19 percentage-point increase was distributed among the decades as follows: nine points between 1951 and 1961, six points from 1961 to 1971, and four points from 1971 to 1981. Some reasons for this shift to the service sector are given in Section II. In anticipation of that analysis, it can be noted that more rapidly rising *demand* for services by the population (and the associated increase in output) was probably *not* the major cause of the faster increase in service sector employment in the 1950s and 1960s. And this was certainly not the only cause in the 1970s. More rapidly increasing productivity in the goods-producing rather than the commercial services sector plays a large role in this restructuring of the labour force. This was particularly true during the period of high productivity increase before the early 1970s.

But the service sector is a very large group of dissimilar industries, so a closer look at the data is warranted. In particular, it is necessary to distinguish commercial services from non-commercial (or public) services, which by and large do not operate for profit and are largely financed directly by governments.

Observation 2: The tendency for the non-commercial (public) service sector to employ an ever-increasing share of the labour force during the 1950s and 1960s stopped during the 1971-81 period, largely because of *declines* in the proportion of the labour force employed by the federal government and the education sector.

¹ Throughout this report the term labour force refers to the *experienced* labour force, which includes the employed and the unemployed who worked during the previous 18 months. This is the only source of readily available data for which comparable figures exist back to 1951 at a reasonable level of industrial detail.

Chart — 1
Percent of the Experienced Labour Force in the Service Sectors, 1951 to 1981

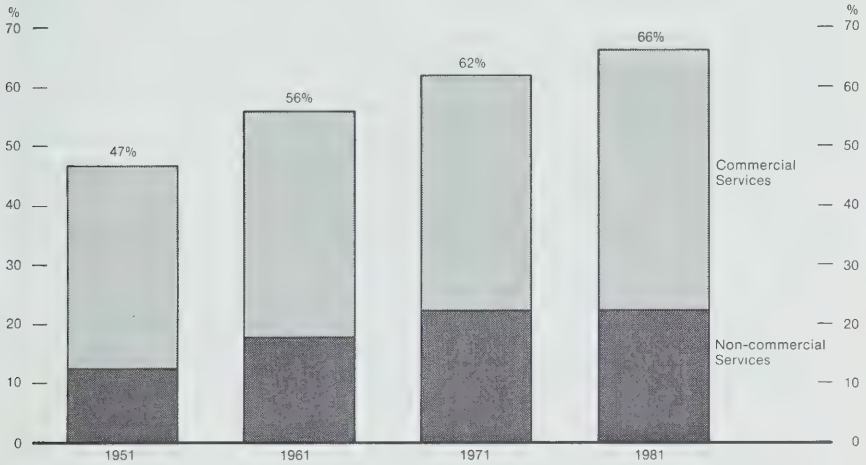
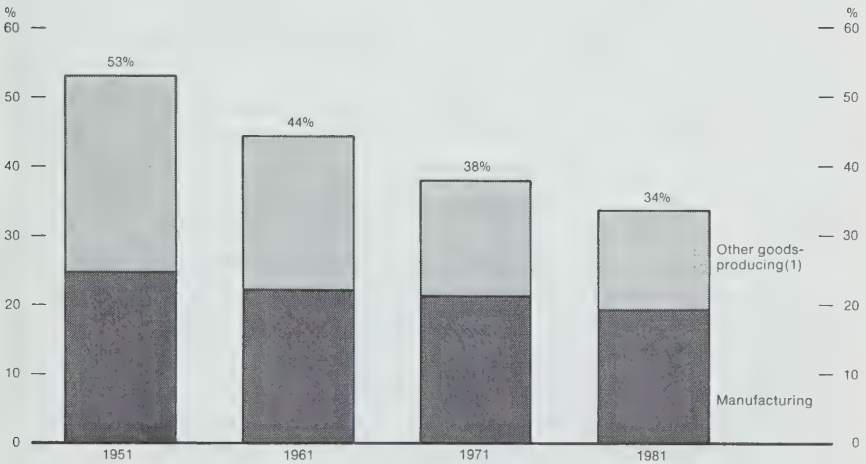


Chart — 2
Percent of the Experienced Labour Force in the Goods-producing Sector, 1951 to 1981



The proportion of workers in *non-commercial services* rose from 12.4% in 1951 to 22.1% in 1971, but did not change between 1971 and 1981. Some non-commercial services continued to grow faster than the labour force as a whole, notably the health sector and provincial and local public administration. However, education and federal public administration (including defence) experienced very slow growth. As a result, the proportion of the labour force in the education sector declined from 7.0% to 6.6% between 1971 and 1981, while the percentage in federal public administration² fell from 4.1% to 3.3%. In fact, federal public administration was among the ten slowest-growing industries during the 1971-81 decade.

² Public administration, as defined in the 1970 Standard Industrial Classification Manual, which is used in the collection of both census and labour force survey data, does not include all government employment. Basically, it covers activities that have no commercial counterpart (e.g., Defence, Revenue Canada, Supply and Services, etc.) plus the *administrative components* of government activities that have a commercial counterpart (e.g., employees of government experimental farms would not be in Public Administration, but the administrative component of the Department of Agriculture would). Government enterprises are not included in public administration (e.g., Air Canada, Canada Mortgage and Housing, etc.). There are three different definitions used in reporting government employment; public administration, general government, and total government. In 1983, at the federal level, the *Public Administration* component was 284,000, *General Government* (excluding government enterprises) was 445,000, and *total* federal government (including government enterprises) employment was 581,000 (see Statistics Canada Catalogue No. 72-004). However, the *general trend* in federal government employment is the same regardless of which definition is used. Between 1975 and 1983, Public Administration employment (used in this report) General Government employment, and *total* government employment (including government enterprises) all increased 1% annually. Thus, the general finding that the federal share of total employment has been falling holds for all definitions.

The share of a nation's resources spent on non-commercial activities such as health, education, and government is a function of political, economic, and demographic considerations. As economic and productivity growth slowed, inflation rose and real incomes fell slightly in the latter part of the seventies, governments attempted to restrain expenditures and employment growth in the public sector. As well, the decreasing number of young people meant lower enrolment and less pressure on the education system.

Observation 3: While *non-commercial* (public) services led the expansion of the services sector in the fifties and sixties, it was the strength of *commercial services* that was responsible for the services sector's rising share of the labour force during the 1971-81 period.

During the 1951-61 period, the *service* sector increased its share of the labour force by nine percentage points (Table 1). *Non-commercial* services played the major role in this expansion, accounting for more than five of those points. Non-commercial services were even more dominant in the following decade, accounting for 4.5 points of a six percentage-point increase in the proportion of all workers in the services sector. But between 1971 and 1981, the four percentage-point increase in the share of workers in the service sector was entirely attributable to *commercial* services.

Observation 4: Within the strong commercial services area, *producer services*, providing services based largely on the processing, analysis and/or distribution of information, demonstrated the most rapid growth and largest increase in the share of the labour force. The traditional *consumer services* increased its share of the labour force to a lesser degree.

Table 1
Increasing Share of the Labour Force in the Service Sector, 1951 to 1981

Year	Service Sector Share of Labour Force	Percentage Point Increase in Share			
		Decade	Total Services	Commercial Services	Non-Commercial Services
1951	47%	1951-61	9	3.7	5.2
1961	56%	1961-71	6	1.7	4.5
1971	62%	1971-81	4	4.1	0.0
1981	66%				

Source: Table B4.

The *producer services sector* - consisting largely of professional services (legal, accounting, engineering, management consulting, etc.), finance, insurance and real estate organizations - increased its share of the labour force from 3.8% in 1951 to 9.5% in 1981. It was the fastest-growing of the major sectors during all three decades, with its labour force increasing at an annual average 5.5%, 6.0% and 6.2% during the 1951-1961, 1961-1971 and 1971-1981 decades.

The increasing importance of producer services is related to the much-discussed, but as yet ill-understood, rise in the "information economy". For this group of industries, the processing, analysis and dissemination of information form the basis of much of the service they provide. These industries clearly do not encompass the entire "information economy", as it has been estimated that in the U.S. "nearly half the labour force holds some sort of 'informational' job".³ However, they are the most information-dependent of the commercial services, and perhaps of the entire economy, although parts of the non-commercial services sector are also very information-dependent. And people employed in producer services are more likely to have high levels of education and training than other parts of the commercial services group.⁴

The more rapid expansion of employment in this sector is also related to the slower productivity growth of these industries (according to available measures of output and employment). This point is developed in the next section.

Consumer services industries also demonstrated higher than average growth, increasing their share of the labour force from 7.3% in 1951 to 10.8% in 1981. The *distributive services* share remained constant at approximately 24% during all three decades.

³ M. Porat, *The Information Economy, Definitions and Measurement*, 1977, p. 1.

⁴ The non-commercial services sector is the other major segment of the economy that has a relatively highly educated labour force.

Observation 5: While the rate of labour force growth was higher in the service than in the goods-producing sector during the past three decades, the ability of the goods-producing sector to create jobs was not weakening substantially before the recession.

The service sector's share of the labour force continued to rise over the three decades, because jobs were created at a faster pace in this sector than in the goods-producing sector. However this does not mean that the goods-producing sector experienced languid growth (by historical standards) before the recession, as is often believed. When the 1971-81 decade is placed in the context of the entire post-World War II period, it can be seen that it is not a case of the once strong and rapidly growing goods-producing sector deteriorating substantially. Rather, growth during the seventies was somewhat slower than during the sixties, but much more rapid than during the fifties.

The sharp decline in agricultural employment during the fifties and sixties tends to distort the picture for the remaining (and major) portion of the goods-producing sector. Therefore, it is less misleading to examine the goods-producing sector *excluding agriculture*. Based on census data, annual average growth rates of the sector's labour force were 1.2%, 2.2% and 2.5%, respectively, for the three decades⁵ (Chart 3). But during the 1971-81 period, *employment* did not grow as fast as the experienced labour force, because unemployment increased. From 1971 to 1981, the annual *employment* increase in the goods-producing sector (excluding agriculture) was somewhere between 1.7% and 2.2%, depending on which data source is used.⁶ This compares with an estimated 1.2% during the fifties and 2.2% during the sixties.

⁵ Including agriculture, the annual average growth rates for the goods-producing labour force were 0.2%, 1.4% and 2.2%, respectively.

⁶ Census and Labour Force Survey (i.e., household survey) data indicate the higher growth rate; establishment survey data, the lower. The establishment survey data are in Appendix A.

Thus, during the 1971-81 period, the labour force in the non-agricultural goods-producing sector expanded at a faster rate than during the fifties, but at a slightly slower rate than during the sixties. The goods-producing sector contributed between 18% and 25% of the total *net* increase in the labour force and employment during each of the three decades (Chart 5). It remained a significant source of new jobs prior to the recession. However, during all three decades, the service sector's labour force was growing faster: 4.0% annually.

Within the goods-producing sector, growth in the *manufacturing* labour force and employment did decline substantially between the sixties and the 1971-81 period. The extent of the slowdown depends on the data source, but the growth rate fell from an annual average of about 2.3% between 1961 and 1971 to somewhere between 1.4% and 1.8% between 1971 and 1981. Nonetheless, this was still higher than in the fifties, when annual average growth of the manufacturing labour force was in the order of 1.0%

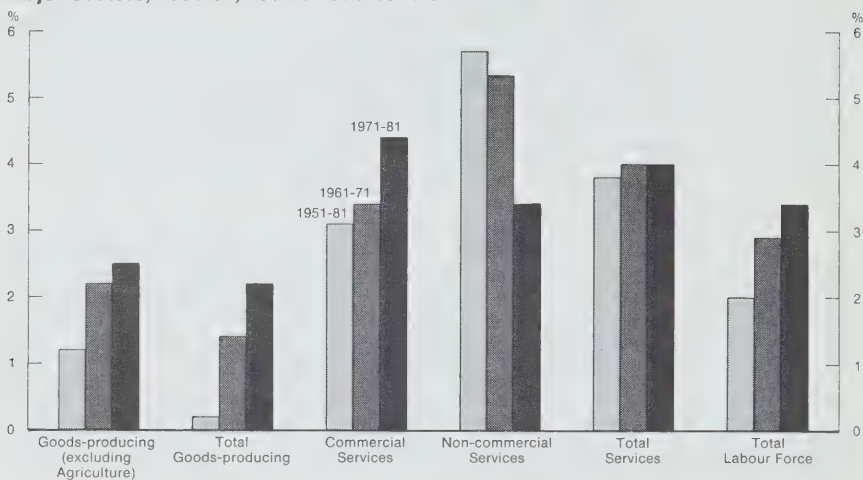
The remaining portion of the goods-producing sector was stronger during the 1971-81 period, particularly mining, oil and gas wells industries. Non-manufacturing employment increased at about 2.4% to 3.0% annually, depending on the data source. Thus, between the sixties and the seventies, employment creation shifted away from manufacturing to other (primarily resource-based) goods-producing industries.

Observation 6: The labour force of a few industries - predominantly manufacturing - grew very slowly or declined over most of the 1951-81 period. However, during the 1970s, fewer industries had shrinking labour forces than in the 1950s and 1960s. There was also a set of industries that displayed very strong labour force growth over most of the three decades.

During the fifties, the labour force in eight industries actually declined. In the sixties, this was true of seven industries, and of just three in the seventies. The ten slowest-growing (or declining) indus-

Chart — 3

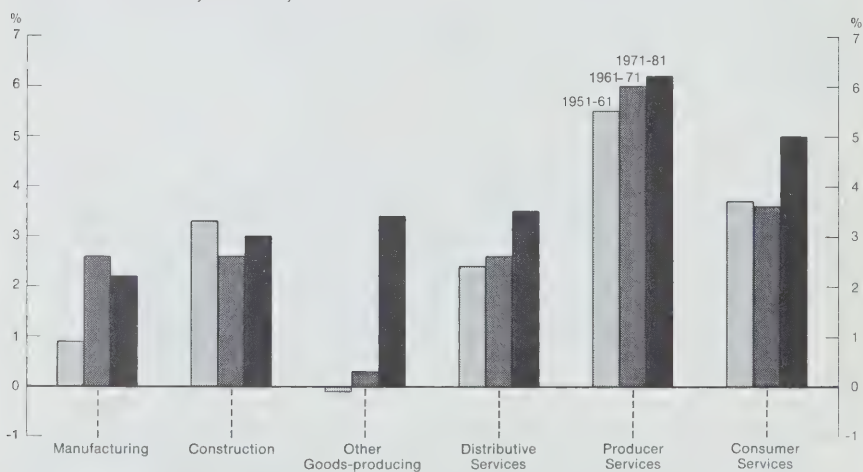
**Annual Average Percent Growth in the Experienced Labour Force,
Major Sectors, 1951-61, 1961-71 and 1971-81**



Source: Table B5

Chart — 4

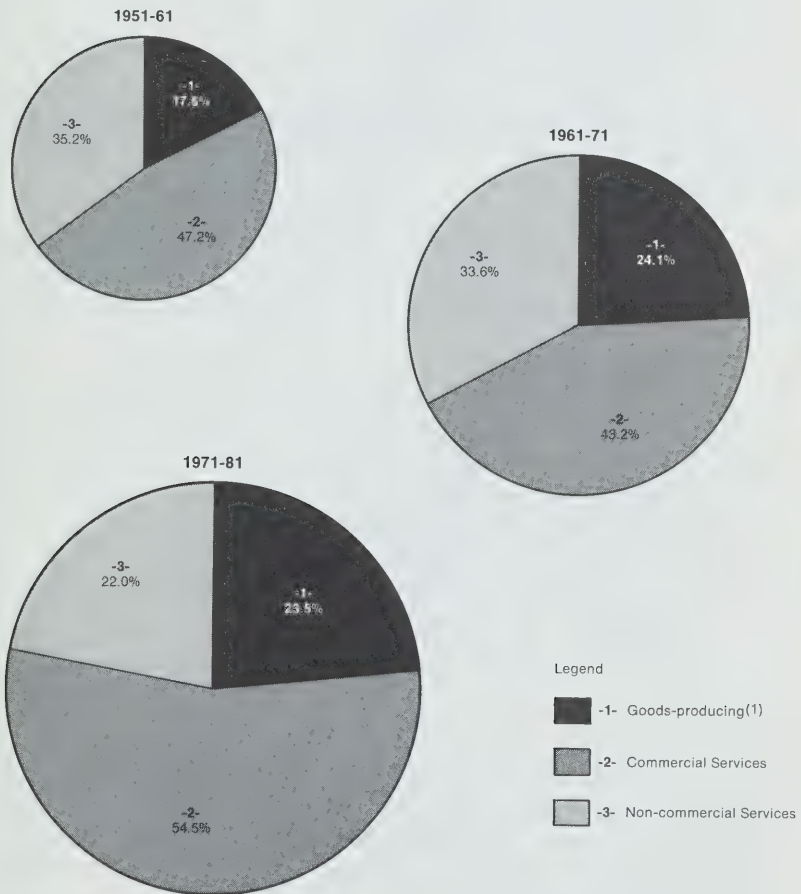
**Annual Average Percent Growth in the Experienced Labour Force,
Selected Industries, 1951-61, 1961-71 and 1971-81**



Source: Tables B2 and B5.

Chart — 5

Percent of Total Expansion in the Experienced Labour Force Contributed by the Major Sectors, 1951-61, 1961-71 and 1971-81



(1) Excluding agriculture in all years.

Source: Table B6.

tries are shown in Table 2. Those that made the list in 1971-81 and at least one other period were:

- Agriculture (goods-prod.)
- Tobacco Products (manuf.)
- Knitting Mills (manuf.)
- Primary Metals (manuf.)
- Textile Industry (manuf.)

These are the ones that might be expected to appear in a list of slow-growing or declining industries, as their cases have been highly publicized.

The ten industries with the most rapidly growing labour forces is even more consistent over the three periods. Those that made the fastest-growing list for 1971-81 and at least one other decade were:

- Services to Business Management (comm. serv.)
- Accommodation and Food Services (comm. serv.)
- Amusement and Recreational Services (comm. serv.)
- Insurance and Real Estate (comm. serv.)
- Financial Services (comm. serv.)
- Local Administration (non-comm. serv.)
- Provincial Administration (non-comm. serv.)
- Health and Welfare Services (non-comm. serv.)
- Wholesale Trade (comm. serv.)
- Machinery Industry (manuf.)

Observation 7: Overall, the rate of redistribution of jobs among industries and sectors has slowed considerably since the fifties. The change in the distribution of the labour force by industry between 1971 and 1981 was only 65% of what it was between 1951 and 1961.

Table 2
Slowest and Fastest Growing Industries, 1951-61, 1961-71 and 1971-81

Ten Slowest Growing or Declining Industries (Experienced Labour Force)					
1951-61	% Change	1961-71	% Change	1971-81	
Fishing and Trapping	-31.3	Fishing and Trapping	-26.8	Tobacco Products	-9.6
Primary Metal Industries	-28.7	Forestry	-25.8	Agriculture	-1.6
Agriculture	-22.6	Agriculture	-21.5	Personal Services	-0.4
Textile Industries	-22.5	Leather Industries	-8.6	Leather Industries	8.2
Knitting Mills	-16.4	Personal Services	-4.4	Electrical Products	11.6
Forestry	-15.4	Knitting Mills	-1.0	Federal Administration	13.5
Wood Industries	-12.9	Religious Organizations	4.5	Textile Industries	13.5
Transportation Equipment	-6.6	Tobacco Products	6.4	Paper and Allied Industries	14.1
Clothing Industries	4.6	Wood Industries	9.4	Primary Metal Industries	14.3
Tobacco Products	5.2	Transportation and Storage	12.3	Knitting Mills	14.8
Ten Fastest Growing Industries (Experienced Labour Force)					
Local Administration	119.3	Provincial Administration	139.7	Services to Business	105.7
Services to Business	98.5	Education and Related Services to Business	119.4	Management and Misc. Serv.	82.2
Provincial Administration	87.1	Management and Misc. Serv.	112.0	Accommodation and Food Services	67.2
Health and Welfare Services	79.1	Amusement and Recreation	101.3	Amusement and Recreation	66.1
Education and Related	78.3	Rubber and Plastic Products	89.4	Insurance and Real Estate	63.7
Financial Institutions	62.6	Health and Welfare Services	76.7	Financial Institutions	58.9
Insurance and Real Estate	58.5	Financial Institutions	74.6	Local Administration	56.3
Federal Administration	57.4	Machinery Industries	63.5	Provincial Administration	56.3
Accommodation and Food Services	55.2	Insurance and Real Estate	54.6	Health and Welfare Services	56.2
Amusement and Recreation	42.9	Accommodation and Food Services	52.5	Wholesale Trade	51.7
				Machinery Industries	49.4

Source: Table B2.

A *dissimilarity index*⁷ shows the extent to which two distributions are different. The larger the index number, the more dissimilar are the two distributions. In this case, higher numbers indicate greater changes in the distribution of the labour force among the 42 industries during the period in question. The index values for the three periods are given in the following table:

Index of Dissimilarity

	1951-61	1961-71	1971-81
All industries	10.8	10.0	6.8
Excluding agriculture	8.6	8.7	6.2

The index demonstrates that *changes* in the way workers were distributed among industries were greater during the 1950s than in the 1960s, and greater during the 1960s than in the 1970s. However, much of the difference could have been due to one industry, agriculture. Movement out of agriculture to other industries contributed to the change during the 1950s, but this movement had slowed by the 1970s. However, even when agriculture is removed from the calculations, the redistribution of the labour force among industries decreases significantly between the 1950s and 1970s.

⁷ The sum of the absolute value of the differences in the distributions divided by two. More specifically, let the distribution at time period t be $D_t = (P_{1,t}, P_{2,t} \dots P_{n,t})$ where $P_{i,t}$ represents the proportion in category i at time

$$t, \text{ and } \sum_{i=1}^n P_{i,t} = 100$$

The dissimilarity index value between two periods, $t = 1, 2$ is then

$$\frac{1}{2} \sum_{i=1}^n |P_{i,2} - P_{i,1}|$$

There is another way of analyzing this phenomenon. One problem with looking at changes in distributions is that very large industries can dominate the calculations. But if percent changes are used, this problem does not occur, since every industry gets an equal weight in the calculation.

For example, if the labour force in all industries increases at exactly the same rate, the distribution of the labour force among industries does not change. On the other hand, the *more dissimilar the rates of growth* of different industries, the greater the extent of structural change.

To indicate the disparities in growth rates, the rate for each industry was compared with that for the experienced labour force as a whole. This ratio is plotted for all 41 industries for the three periods in Chart 6.

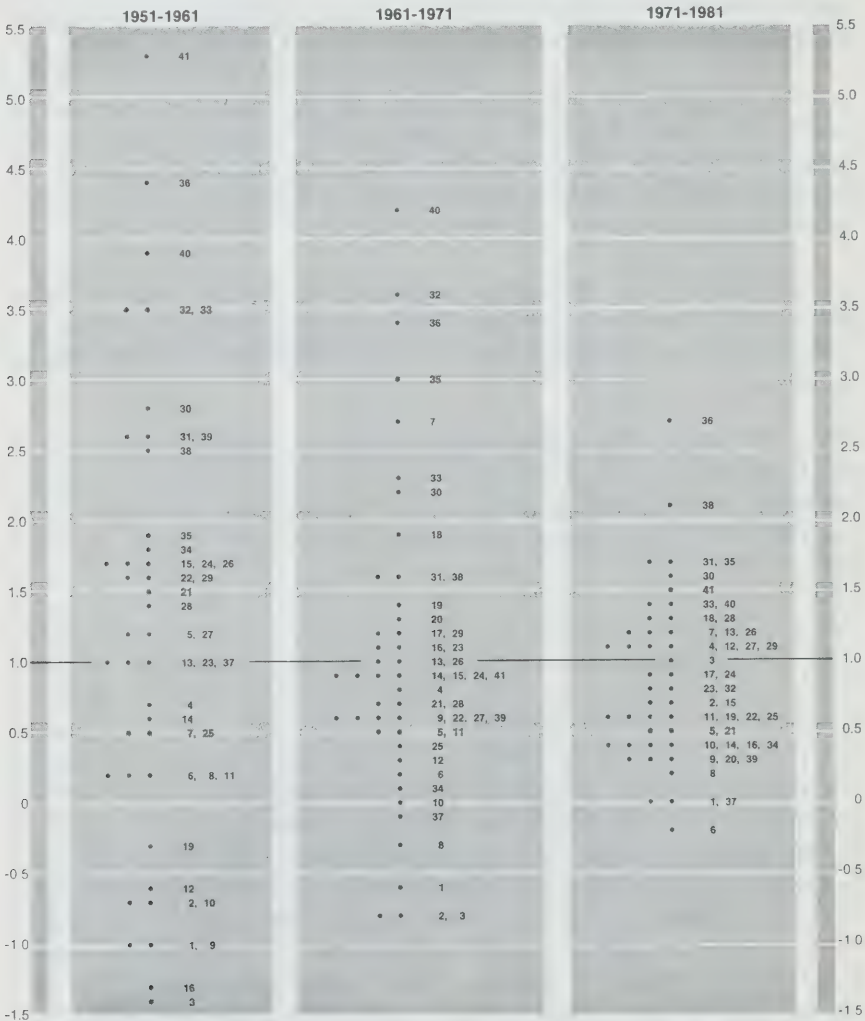
It is evident that growth rates of the different industries were much closer during the seventies than during the fifties. Thus, the change in the distribution of the labour force among industries during the 1950s was much greater than during the 1970s.^{8,9}

⁸ This is of particular significance for occupational demand models, typically of the "fixed-coefficient" type, which assume the mix of occupations within industries remains constant. Thus, the changing demand for occupations is dictated primarily by changes in employment by industry. As demonstrated in Freeman (1980) or Picot (1982), the less the *variation* in the rate of employment growth among industries, the smaller the proportion of total change in occupational demand that is likely to be captured by fixed-coefficient manpower models. Thus, these types of models were likely to have been more useful in the 1950s than in the 1970s.

⁹ This conclusion holds true when the data are analyzed at this level of detail (41 industry groupings). Within these groupings, for example at the level of the shipbuilding industry, the aircraft manufacturing industry, etc., there may be considerable structural change.

Chart — 6
Relative Growth Rates of 41 Industries, 1951-61, 1961-71 and 1971-81

Ratio: Percent Change in Each Industry to Percent Change in Total Experienced Labour Force.



Note: Numbers on the chart refer to each industry listed in Table B2, with the exception of Other Government Offices.
Source: Table B2.

This is examined in more detail in Section II. Economic factors such as rising GNP, changing real disposable income, and increasing variation in productivity rates among industries influence the industrial employment structure. It appears that as economic growth, real incomes, and productivity growth declined during the late 1970s, so, too, did the structural change of industrial employment.

RECENT PATTERNS IN EMPLOYMENT BY INDUSTRY AND SECTOR

Employment patterns between 1981 and 1984 have been dominated by the 1981-82 recession. To provide some historical context, the recession and post-recession period are contrasted with the five or ten years before 1984. Employment changes during the recession have been examined at length in both statistical publications and the business press. Thus, nothing would be gained by dwelling on them here. Nor will attention focus on some of the more recent phenomena, such as the increasing importance of part-time work. The intent is to contrast the 1981-84 experience with earlier periods with regard to the changing distribution of industrial employment and the areas of growth or decline in the economy. This section differs from the preceding one in that *employment* data from the Census and Labour Force Survey can be used, rather than data on the experienced labour force. As before, detailed figures are provided in Appendix B and some major observations are outlined.

Observation 8: By historical standards, employment growth leading up to the recession was substantial in both the goods-producing and service sectors. The decline during the recession was steepest in the goods-producing sector.

Between 1976 and 1981, the annual average percent increase in total employment was 3.0%. This was quite respectable compared with growth rates of 2.9% to 3.4% during the sixties and early seventies.

Service sector employment increased 3.6% a year between 1976 and 1981, compared with 3.8% to 4.0% in the earlier decades. While the growth rate in the *goods-producing* sector remained below that of services, as it has for many decades, it, too, was substantial by historical standards: 2.0% for 1976-81, compared with 1.7% to 2.1% during the seventies as a whole, and 2.2% during the sixties.

But between July 1981 and December 1982, the goods-producing sector's decline was precipitous: employment fell 14% (using seasonally adjusted data). Even by 1984, employment remained 7.6% below pre-recession (1981) levels. The service sector experienced some decline, but nothing so acute, falling only 1%. And employment in both service sectors was above pre-recession levels by 1984, with commercial services at 2.2% above 1981 and non-commercial services 6.5% higher.

Observation 9: During the five years before the recession, the rate at which the service sector increased its share of total employment slowed down. The non-commercial services' share of employment actually fell slightly. The impetus for expansion came from commercial services, which accounted for most net job creation. However, job creation in Canada was not as concentrated in the services as it was in the United States during the 1970s.

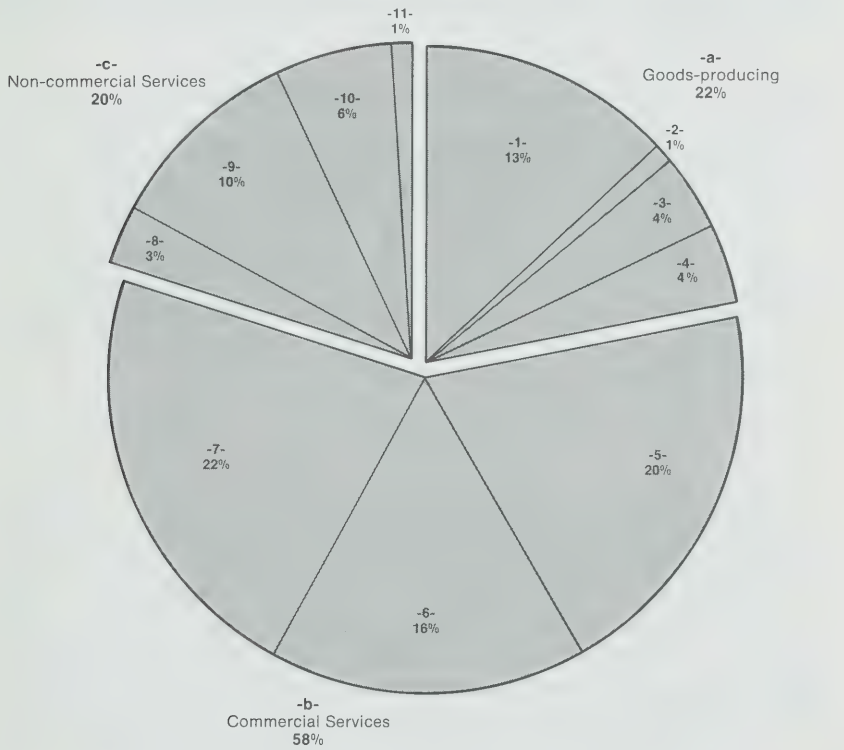
During the 1976-81 period, the total service sector's share of employment increased by 1.9 percentage points. However, the *non-commercial* (public) services' share dropped 0.3 percentage points, while *commercial* services' share rose 2.2 points. Fifty-eight percent of the total increase in employment between 1976 and 1981 was in commercial services. The goods-producing sector contributed 22%, and non-commercial services, 20% (Chart 7).

While the Services sector clearly dominated job creation, census data indicate that the goods-producing sector played a much larger role in Canada than in the U.S. during the 1970s. Between 1971 and

Chart — 7

Contribution to Net Job Creation Between 1976 and 1981, Major Sectors

(Percent distribution of increase in employment)



Legend

- | | | |
|------------------------------|---------------------------|----------------------------|
| -a- | -b- | -c- |
| -1- Manufacturing | -5- Distributive Services | -8- Education |
| -2- Construction | -6- Producer Services | -9- Health and Welfare |
| -3- Mines, Oil and Gas Wells | -7- Consumer Services | -10- Public Administration |
| -4- Other Goods-producing | | -11- Other Non-commercial |

Source: Tables B9 and B12.

1981, manufacturing was responsible for 14% of net job creation in Canada (compared with 5% in the United States), and the entire goods-producing sector, 23% (compared with 11% in the United States). Nonetheless, most (55%) job creation in Canada was in commercial services.

Observation 10: Research on the Canadian labour market of the 1970s found that the most important job creators were small enterprises, particularly those in the commercial services. The findings of a second study not only confirmed the importance of small commercial service firms in job creation, but suggested that in the goods-producing sector during the late 1970s and early 1980s, small firms dominated what job creation took place during the period.

Recent research by the Federal Department of Regional Industrial Expansion (DRIE, 1985) found that of the net new jobs created in the Canadian commercial economy between 1974 and 1982, 58% were in enterprises with fewer than 20 employees (Table 3A). This occurred in spite of the fact that small firms represent a relatively small share of the economy - estimated in the study to be 28% of all commercial sector¹⁰ employment in 1974, and 33% in 1982. A similar study by Birch (1981) on the U.S. commercial economy using data for the period 1969 to 1976 found that 66% of the net new jobs were created by firms with less than 20 employees.

These studies were somewhat exploratory, since the data base used to produce the information was neither a census of all enterprises in the economy, nor a representative sample of firms in any economic sector. The enterprises in the DRIE study represented about 60% of all employees in the commercial economy.

¹⁰ Excludes the non-commercial (public) services sector, such as government, education and hospital services.

Table 3a
 Net Change in Employment (New Jobs Created) Between 1974 and 1982, by Firm
 Size and Sector (Commercial Economy)
 - Department of Regional Industrial Expansion Study -

Sector		Size of Firm (employees)			Total
		0-19	20-499	500+	
1. Goods-Producing	% dist.	77%	-32%	55%	100%
	no. (000's)	183.1	-75.6	131.0	238.5
Manufacturing	% dist.	74%	-51%	77%	100%
	no. (000's)	82.9	-56.9	86.0	112.1
Mining	% dist.	18%	14%	68%	100%
	no. (000's)	8.8	7.1	34.1	50.0
Construction	% dist.	134%	-46%	12%	100%
	no. (000's)	74.9	-25.9	6.9	56.0
Agric./Forestry/Fishing	% dist.	81%	0%	19%	100%
	no. (000's)	16.5	..	3.9	20.5
2. Commercial Services	% dist.	52%	15%	33%	100%
	no. (000's)	416.2	118.0	265.6	799.9
Distributive Services	% dist.	55%	1%	44%	100%
	no. (000's)	191.7	4.8	154.5	351.0
Producer Services	% dist.	42%	21%	37%	100%
	no. (000's)	97.7	50.0	87.6	235.3
Consumer Services	% dist.	59%	30%	11%	100%
	no. (000's)	126.8	63.2	23.5	213.6
3. Total Commercial Economy (1 + 2)	% dist.	58%	4%	38%	100%
	no. (000's)	599.4	42.5	396.6	1038.4

Note: Excludes education, health and welfare, religious and government services which are considered part of the non-commercial (public) sector in this report.

Source: Based on data in A Study of Job Creation in Canada, 1974 to 1982, Statistical and Data Base Services, Department of Regional Industrial Expansion, Government of Canada, 1985.

Table 3b
 Net Change in Employment (New Jobs Created) Between 1978 and 1982, by Firm
 Size and Sector
 - Statistics Canada Study -

Sector		Size of Firm (employees)			Total
		0-19	20-499	500+	
1. Goods-Producing	% dist.	107%	-122%	-85%	-100%
	no. (000's)	64.4	-73.5	-51.1	-60.2
Manufacturing	% dist.	60%	-72%	-88%	-100%
	no. (000's)	42.9	-51.4	-62.9	-71.4
Mining	% dist.	49%	21%	30%	100%
	no. (000's)	11.9	5.1	7.2	24.2
Construction	% dist.	-14%	-103%	17%	-100%
	no. (000's)	-2.9	-21.4	3.5	-20.8
Agric./Forestry/Fishing	% dist.	160%	100%
	no. (000's)	12.6	7.8
2. Commercial Services	% dist.	59%	16%	25%	100%
	no. (000's)	285.1	79.4	118.7	483.2
Distributive Services	% dist.	59%	2%	39%	100%
	no. (000's)	131.5	4.3	85.4	221.2
Producer Services	% dist.	54%	27%	19%	100%
	no. (000's)	71.7	35.7	24.5	132.0
Consumer Services	% dist.	63%	30%	7%	100%
	no. (000's)	81.8	39.4	8.7	130.0
3. Total Commercial Economy (1 + 2)	% dist.	83%	1%	16%	100%
	no. (000's)	349.6	5.9	67.6	423.0
4. Non-Commercial Services (excluding Public Administration)	% dist.	32%	33%	36%	100%
	no. (000's)	65.7	67.7	74.6	207.9
5. All Sectors ¹ (excluding Public Administration)	% dist.	66%	12%	21%	100%
	no. (000's)	442.0	81.3	142.5	665.8

¹ Includes an unclassified component of 40.0 thousand new jobs.

Source: Preliminary data from the study, Employment Creation in Canada: A Longitudinal Assessment of Industry, Firm Size and Country of Control, 1978-82, Statistics Canada Catalogue Number 18-501, 1986 (forthcoming).

A Statistics Canada study (1986) overcame this undercoverage by estimating the number of workers in a firm based on the size of the firm's payroll.¹¹ Such data are available for all firms and organizations in all sectors of the economy. Estimates of employment creation by firm size were derived for the period 1978 to 1982, and are reported in Table 3B.

The findings of the two Canadian studies - Statistics Canada (1978-82) and DRIE (1974-1982) are similar for the commercial services sector, but quite different for the goods-producing sector. In *commercial services*, both studies found that the majority of new job creation occurred in firms with fewer than 20 employees; (52% in the DRIE study; 59% in the Statistics Canada study). And small firms were important job creators in each sub-sector of the commercial services.

As one would expect in the *consumer services* (food and accommodation services, personal services, leisure services, etc.) small enterprises played a dominant role, creating 59% to 63% of net jobs, depending upon the period studied and the data base employed. Relatively few jobs in that sector (7% to 11%) were created by large firms (over 500 employees). In *producer services* (business services, finance, real estate, etc.), the fastest-growing sector of the economy for many years, small firms were less dominant, with 42% to 54% of net job creation; large firms figured more prominently, accounting for 19% to 37% of net new jobs. Small enterprises in the *distributive services* (transportation, trade, etc.) represented over half of jobs created: 55% to 59%; and large firms, 39% to 44%.

But the importance of small firms in job creation is not restricted to commercial services. The DRIE study shows that between 1974 to 1982, small firms in the *goods-producing* sector created the majority (77%) of new jobs, large firms created somewhat fewer, (55%), and medium-size firms (20 to 499 employees) experienced a net decline in

¹¹ Simply put, employment estimates for full-year equivalent employees were derived by dividing a firm's annual payroll by average annual earnings for workers in each (3-digit SIC) industry-province combination.

employment.¹² The Statistics Canada study suggests that in terms of job creation, small goods-producing firms were even more important during the 1978-82 period than during earlier periods. As a group, only small firms showed a net increase in employment: 64,000 jobs or 107%¹³ of the total net change in employment as shown in Table 3B. Both medium and large firms experienced net declines in employment (73,000 and 51,000 jobs, respectively).

While some of the differences in the findings of the two studies are no doubt attributable to different definitions, databases and methodologies,¹⁴ much likely reflects the fact that they cover different periods. Specifically, the Statistics Canada study, which examined a shorter timespan, would be more influenced by the 1981-82 recession than the DRIE study.

As already noted, this recession had a dramatic influence on job creation, particularly in the goods-producing sector. Employment in that sector fell 14% between July 1981 and December 1982, wiping out more jobs than were created during the five previous years. Both studies incorporate this dramatic employment decline, but the Statistics Canada report covers only four years, and the DRIE study eight, so the latter includes a much longer period of stable employment creation leading up to July 1981. Thus, its findings for the goods-producing sector are less influenced by the recession than those of the

¹² The sum of the percent of jobs created in small and large sized firms is more than 100, because the net job creation in medium size firms was negative.

¹³ The percent is over 100 because there was *negative* net job creation (i.e., employment fell) among medium and large size firms. For example, in the first row of Table 3B, large firms are said to account for -85% of total net job creation since they lost 55,100 jobs, or 85% of the total number of 60,200 jobs which were lost during the period.

¹⁴ Differences in definitions such as the use of full-year equivalent employment in the Statistics Canada study, and actual number of employees in the DRIE study, and differences in the databases, with the Statistics Canada study relying on payroll data and the DRIE study using the Dun and Bradstreet "Market Identifier" file.

Statistics Canada study.¹⁵ Both, however, incorporate two very dissimilar periods in terms of employment creation: predominately growth between 1974 and mid-1981, followed by a sharp decline to the end of 1982.

Examining the goods-producing sector in more detail, the DRIE study shows that small firms dominated net employment creation in *agriculture, forestry, fishing and construction* between 1974 and 1982, accounting for between 81% and 134% of then net employment change (net new jobs).

In *manufacturing*, small and large firms shared about equally in terms of net job creation,¹⁶ with intermediate-sized firms experiencing a net decline. *Mining* was radically different: large firms tended to account for most (68%) job creation. These figures, of course, to some degree reflect the types of enterprises that characterize the various industrial sectors; for example, large firms dominate mining, and hence, job creation in that industry.

The Statistics Canada study, more influenced by the 1981-82 recession, showed that during the 1978 to 1982 period, in *manufacturing* and the *primary industries* only small firms experienced a net increase in employment. Both medium and large firms registered substantial employment losses. In *construction*, none of the three categories showed a large employment increase, with declines in both small and medium firms, and little change in large firms. Even in *mining*, where large enterprises seemed to dominate job creation in the

¹⁵ Since the recession did not influence job creation patterns in the commercial services sector to the same degree as in the goods-producing sector, the findings of the two studies are not as dissimilar for the former as for the latter sector.

¹⁶ Variations among particular industries within each sector are, of course, substantial. In manufacturing for example, large firms dominated job creation in the transportation equipment industry (motor vehicles, truck, aircraft manufacturing, etc.) as one would expect, accounting for 93% of employment creation over the period. Small firms dominated in the printing and publishing industry, accounting for 61% of the net employment increase between 1974 and 1982.

mid-1970s, small firms created the largest number of net jobs between 1978 and 1982. The Statistics Canada study indicates that the employment creation that did exist in the goods-producing sector during the 1978-82 period was very heavily concentrated in small firms, while medium and large firms experienced often severe cut-backs. This suggests that, as a group, small goods-producing firms were not as affected by the recession as medium and large firms.

Not surprisingly, in the non-commercial (public) sector, small enterprises play a relatively minor role in job creation, as most of these organizations tend to be quite large. The Statistics Canada study (which included health, welfare and education but excluded public administration) indicated that between 1978 and 1982, 36% of net job creation occurred in large organizations, 33% in medium-size, and only 32% in small enterprises. For the *entire economy*, - both commercial and public sectors (excluding public administration) - the Statistics Canada study estimated that 66% of the net employment increase occurred in small firms, although they accounted for only an estimated 20% of total employment in 1978, and 24% in 1982. Clearly, employment was created at a much faster pace among small firms than among medium or large firms. But the period examined is important.

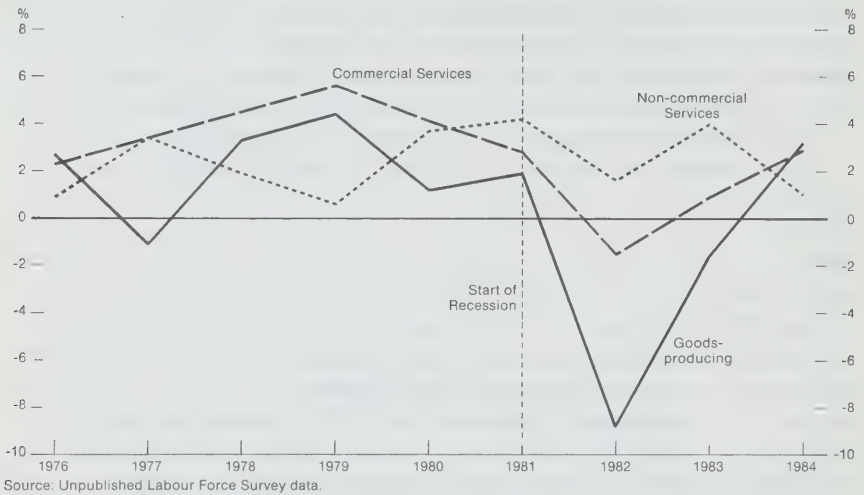
The comparison of the two studies demonstrates the important fact that the period selected for analysis can significantly influence the findings of studies such as these.

It is also important to note that the observation that many jobs were created in small service sector firms does not *necessarily* mean large enterprises contributed little to employment expansion. One cannot draw a conclusion concerning the cause of employment expansion from an observation of where it occurred. Many service sector firms, particularly in distributive and producer services, provide "intermediate" services to other firms, both large and small, rather than directly to consumers or governments (i.e., "final" demand). Thus, the behavior of large firms can influence the ability of small service firms, particularly in distributive and producer services, to expand and create jobs. However, the extent to which small and large firms in various sectors caused employment expansion is beyond the scope of this review.

Observation 11: The *proportion* of workers in the services sector increased rapidly between 1981 and 1984, although there was some recovery in the goods-producing sector of 1984. But unlike the pre-recession years, this change in the distribution of employment was because of the decline in the goods-producing sector rather than a rapidly growing service sector.

In 1984, employment in the goods-producing sector was recovering from the 1983 low. It was, in fact, the fastest growing major sector in the economy, increasing employment by 3.2% (or 105,000) between 1983 and 1984, compared with 2.9% growth in commercial services and virtually no growth in employment in non-commercial services (Chart 8). And the goods-producing sector recovery was led by manufacturing, where employment increased approximately 4.5%. This historically unusual situation of more rapidly growing goods-producing than services employment is probably not surprising during a recovery from a recession where the contraction of the goods-producing sector was so dramatic. The number of jobs lost in the *goods-producing* sector between 1981 and 1983 was very large (380,000), roughly equivalent to the number created over the previous five years. Despite growth in 1984, the sector's *share* of employment was approximately 2.5 percentage points *lower* in 1984 than in 1981. *Commercial* services had gained a slightly larger share of total employment (1.1 percentage points), and the more stable non-commercial (public) sector gained 1.4 percentage points. However, these patterns can be very transitory as recovery continues, and employment growth patterns are likely to remain volatile as recovery continues. Indexes which display employment trends for various sectors and industries leading up to and following the 1981-82 recession are shown in Charts 9 to 11.

Chart — 8
Annual Growth Rate of Employment, Three Major Sectors, 1976 to 1984



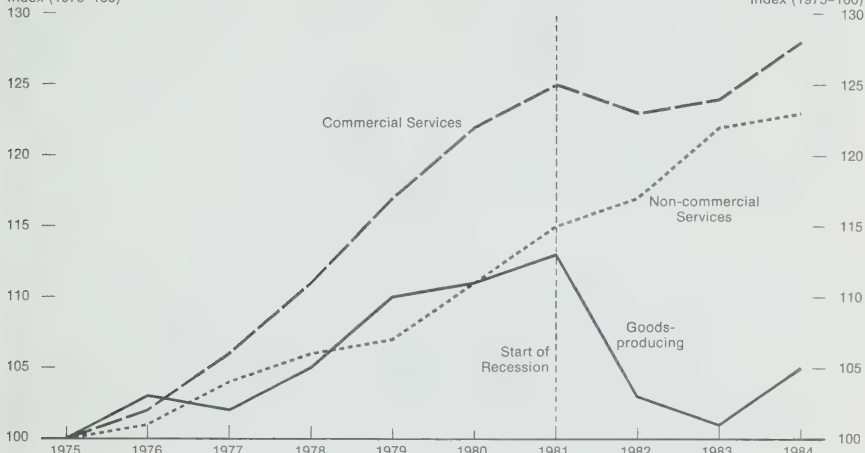
Observation 12: The 1981-82 recession caused substantial re-ordering of industry leaders and losers in terms of employment creation. Until the recession, the list of fastest- and slowest- growing industries had remained relatively stable over the past decade or two. The recession changed the lists dramatically.

Of the ten industries in which employment was growing most quickly during the 1976-81 period, only two remained on the list for

Chart — 9

Index of Employment, Three Major Sectors, 1975 to 1984

Index (1975=100)

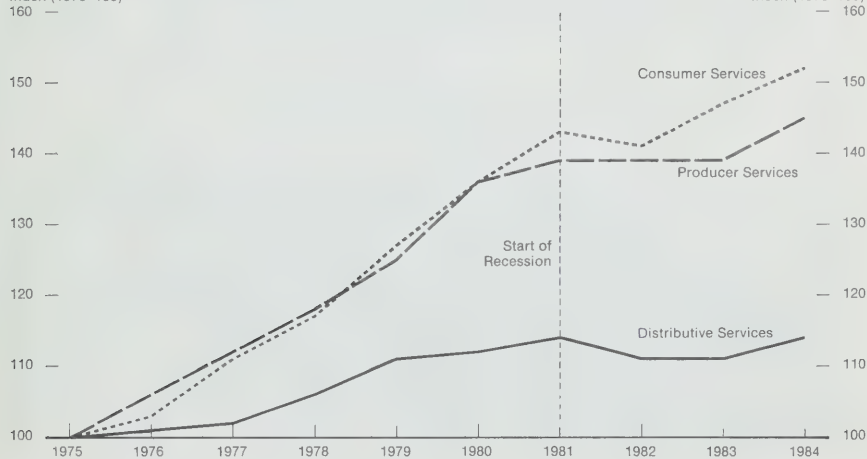


Source: Unpublished Labour Force Survey data.

Chart — 10

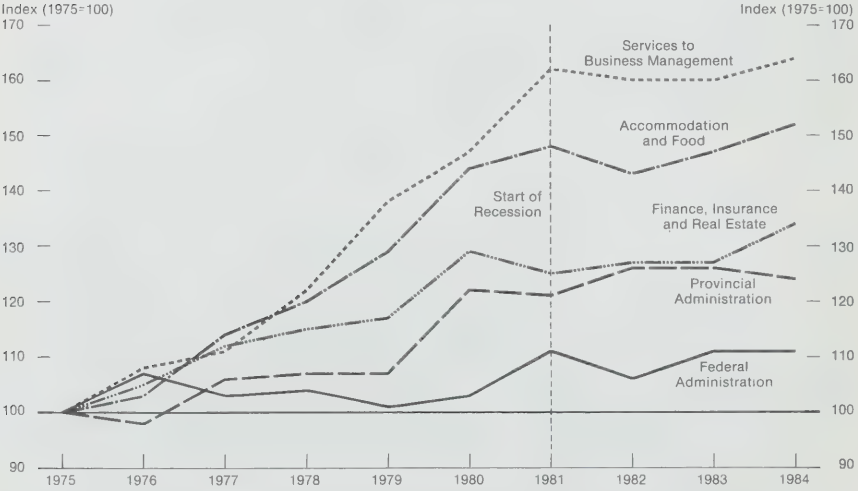
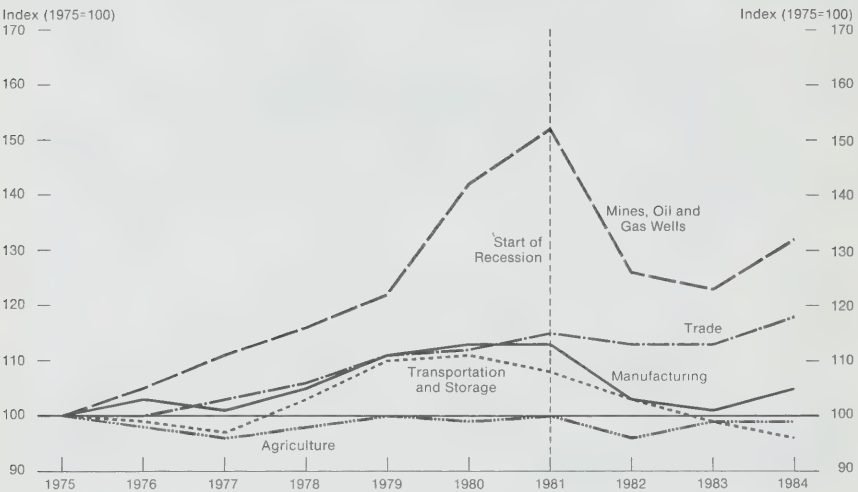
Index of Employment, Commercial Services, 1975 to 1984

Index (1975=100)



Source: Unpublished Labour Force Survey data.

Chart — 11
Index of Employment, Selected Industries, 1975 to 1984



Source: Unpublished Labour Force Survey data.

1981-84 (Table 4). And needless to say, annual average growth rates on the second list were much reduced. With regard to the industries in which employment was rising most slowly or even declining, only four on the 1976-81 list remained on the 1981-84 list. The rest were replaced by industries hard-hit by the recession. The powerful effect of the recession on the goods-producing sector is reflected in the fact that the three industries from that sector that made the *fastest-growing* list during the 1976-81 period (mines/oil/gas wells, machinery, and metal fabricating industries) were on the list of the ten slowest-growing industries for 1981-84.

These lists also show the disparity of employment growth between industries in the same sector. For example, even in the relatively stable non-commercial services, provincial public administration made the 1976-81 fastest-growing list, while federal public administration was among the slowest-growing.

Observation 13: The distribution of employment by industry was altered enormously by the 1981-82 recession. Employment growth during the recovery has tended to move the distribution slightly back toward its pre-recession shape, but the effects of the recession were so great that they remain in 1984.

At least temporarily, trends in the distribution of employment by industry leading up to 1981 have been radically modified. In particular, the situation in the 1970s - a strong commercial services sector increasing its employment share; the non-commercial services sector maintaining its position; and the goods-producing sector's share gradually declining, although its growth rate remained strong by historical standards - has been altered. Whether the direction of the structural change in industrial employment that prevailed before the recession will re-emerge or whether the changes caused by the recession will

Table 4
Fastest and Slowest Growing Industries, 1976-81 and 1981-84
Ten Industries with the Fastest Growing Employment

1976-81	% Change	1981-84	% Change
Services to Business Mgmt.	50%	Religious Organizations	35%
Accommodation & Food		Electrical Products	22%
Services		Rubber & Plastic Products	15%
Mines/Oil & Gas Wells	45%	Miscellaneous Services	15%
Amusement and Recreation	45%	Personal Services	12%
Services		Health and Welfare	11%
Personal Services	38%	Insurance Agencies and Real	
Misc. Services	37%	Estate	9%
Insurance Carriers	27%	Local Admin.	7%
Machinery	25%	Finance Industries	6%
Provincial Public Admin.	24%	Transportation Equipment	6%
Metal Fabricating	21%		

Ten Industries with the Slowest Growing or Declining Employment

1976-81	% Change	1981-84	% Change
Tobacco Products	-30%	Machinery	-38%
General Contractors	-8%	Tobacco Products	-29%
Non-Metallic Min. Prod.	-5%	Metal Fabricating	-22%
Textile Industries	-4%	Primary Metal	-19%
Knitting Mills	0%	Leather Industries	-15%
Paper and Allied	1%	Wood Industries	-15%
Agriculture	3%	Printing, Publishing	
Leather Products	3%	and Allied	-15%
Federal Public Admin.	4%	Non-Metallic Min. Prod.	-14%
Electrical Products	5%	General Contractors	-14%
		Mines, Oil and Gas Wells	-13%

Source: Table B8.

become longer-term trends remains to be seen. To speculate on these possibilities requires an understanding of the process that leads to a redistribution of employment. Some discussion of this process is presented in the next section.

SECTION 2

WHAT CAUSES CHANGE IN THE INDUSTRIAL STRUCTURE OF EMPLOYMENT?

INTRODUCTION

Major trends in the distribution of employment by industry have been reviewed. But what has caused these changes in the employment mix? The observations take on new meaning when the process behind the trends is examined. The purpose of this section is not to analyse all the determinants of changes in employment levels since 1951. Such an endeavour requires a thorough review of a considerable portion of current economic theory and knowledge and is far beyond the scope of this report. Rather, to put the findings of Section I in context, some of the main influences on the redistribution of employment by industry are outlined and discussed in general terms.

Background

The pattern of industrial activity, and hence, of employment, is always changing. New jobs are created as old ones disappear. The commercial economy,¹⁷ which employs about three-quarters of all workers, is in a constant state of flux. Studies in Canada and the United States have discovered that an unexpectedly large number of firms are being started and failing. The Economic Council, studying data from the 1970s for Canada's manufacturing industry noted "a surprising and little-known fact is that birth and death rates (of firms) are very high".¹⁸ They found that out of an average grouping of 88 manufacturing firms in 1970, 38 had failed¹⁹ by 1979, while 25 firms in the same group had been founded, a very high rate of "births" and "deaths". Thus, the picture is one of an extremely

¹⁷ Includes the goods-producing and commercial service sectors.

¹⁸ Economic Council of Canada, *The Bottom Line: Technology, Trade and Income Growth*, 1983, page 115.

¹⁹ Accounting for 31% of industry shipments in 1970.

dynamic industrial structure, with literally thousands of entries and exits over the decade.

A larger American study²⁰ covering the entire commercial economy²¹ found similar evidence. Looking at metropolitan areas in the United States between 1972 and 1976, the researchers observed that, on average, these communities lost 34% of their firms, while the number of new ones established during that period was equivalent to approximately 37% of the 1972 total. Furthermore, very little of this turnover was due to intercity migration of firms; most of it was caused by failures and start-ups.

Not surprisingly, both the Canadian and American studies found that smaller firms were more likely than large ones to be involved in this birth and death process, and that it was the small firms that tended to influence the redistribution of industrial employment. "Since we turn over such a large proportion of our jobs every year - in all industries and in all areas - the overall character of our economy is affected quite quickly by the nature of the job replacers (ie., firms providing new jobs)."²²

The picture, then is one of a high turnover of jobs in the *commercial* economy - particularly among small firms. A Statistics Canada (1986) study on job separations during 1980 found that in the commercial economy there were fully 4.9 million job separations (i.e., number of times a job was left), 2.1 million of which were from small firms.²³ It was estimated that small firms accounted for 25% of employment as indicated by payroll size, but 43% of the separations. Thus, there is particularly high turnover among small firms. Added to this is the constantly changing demand for *non-commercial* (public) services such as education, health and government administration. Thus, in the last thirty years, Canada's economy has evolved from

²⁰ D.L. Birch, Who Creates Jobs, *The Public Interest*, Fall, 1981.

²¹ Approximately four million businesses representing about 80% of the total recognized establishments in the country.

²² D.L. Birch, 1981, page 7.

²³ In this study, small firms include those with less than 50 employees in all sectors except manufacturing, where it includes those with less than 100 employees.

one in which the goods-producing sector provided most jobs to one in which the majority of workers earn their living in the services sector. In 1951, about half the labour force worked in the services sector; by 1981, the proportion had risen to two-thirds.

What is it that fosters this redistribution of jobs among industries?

Without doubt, short-term variations in the demand for goods and services reflecting recessions and periods of strong economic growth are of some importance. Periods of recession and expansion do not have the same effect on employment in all industries. In general, goods-producing industries are harder hit by recessions than are service industries, particularly non-commercial services. The 1981-82 recession provided a particularly vivid demonstration of this: employment in the goods-producing sector fell 14% compared with a drop of just over 1% in the services sector. Thus, at any time, the *mix* of jobs by industry is clearly affected by the stage of the business cycle - whether it is at the bottom, top or somewhere in between.

But these short-term cyclical factors are superimposed on other phenomena that are responsible for the longer-term trends in employment²⁴ and which are of more interest here.

In studying the Canadian labour market, Ostry and Zaidi suggested that "in more general and admittedly oversimplified terms, the dramatic changes in the industrial mix of the labour force stem primarily from marked *divergences* between the income elasticities of demand,²⁵ technological innovation, and productivity in the broad industrial sectors of the economy".²⁶ To this might be added the effect of changes in the labour supply, particularly the growing num-

²⁴ It is, of course, impossible to completely separate short-term cyclical influences on employment from longer-term structural or technological factors, just as it is impossible to separate cyclical demand-deficient unemployment from structural or technological unemployment. Since this discussion is for demonstrative purposes only, these factors will be discussed separately.

²⁵ The percent change in the *demand* for a good or service that results from a one percent rise or fall in real income.

²⁶ Ostry and Zaidi, *Labour Economics in Canada*, 1979, page 112.

ber of women and young people. The large increase in the number of women seeking and finding work in the 1970s, often at lower wages than men, was probably both a cause and a result of the proliferation of jobs in commercial services (particularly Accommodation and Food Services, Retail Services, and Finance, Insurance and Real Estate), in which women predominate.

And trends in firm size, organization and management style are often credited with having contributed to the rise of the services sector. In particular, Stanbeck (1981) and others suggest there has been an increasing tendency for firms to seek financial, legal, computing, accounting, and other "producer" services from outside the firm, rather than developing in-house departments. It is argued that the greater specialization, diversification and economies of scale of the producer services firms (compared to in-house departments) often make them an attractive option, particularly for medium-size firms. It is further argued that changing management styles and the trend toward larger firms has raised the demand for "information" services of the kind provided by producer services firms. Thus, much of the output of the producer services sector is intermediate, serving as input to other firms, rather than being final demand-oriented.

These trends in labour supply and the development of producer services firms have likely influenced the demand for labour in the services relative to the goods-producing sector. But they are not examined in detail in this report.

This discussion will concentrate on the causes of the redistribution of employment by industry suggested by Ostry and Zaidi. The two major factors examined are:

1. changes in demand for goods and services;
2. variations in productivity levels among industries and sectors.

It must be stressed, however, that productivity and demand are inter-related. Increases in productivity (and technological change) may raise demand for goods or services because of lower unit costs and prices, and increased wealth and a higher standard of living in general. Thus, although discussed separately, they are not independent of one another.

CHANGES IN DEMAND AND THE DISTRIBUTION OF EMPLOYMENT

Changes in the demand for the goods or services produced by an industry and the resultant change in output influence employment levels. If productivity (i.e., output per worker) remains constant, employment levels will change as output changes to accommodate changing demand. The impact of changes in the demand for goods and services on employment during the 1981-82 recession was evident in the figures presented in the last section. But the effect of rapid cyclical changes in employment will not be discussed here. Instead, emphasis is on longer-range trends in demand and their influence on employment levels.

Changes in Domestic Demand for Goods and Services

Demand for a good or service is determined by factors such as per capita income, relative prices of various goods and services, consumer preferences, family composition, available leisure time, and the distribution of income in the population. Consumption patterns have tended to shift somewhat away from necessities and convenience goods towards goods relating to lifestyle and personal identity. For example, as per capita real income increases, so does consumption of services such as medical and hospital care, recreation, food and accommodation, and communications and transportation.²⁷ ²⁸ Therefore, if real incomes rises, there will be a proportionately larger increase in demand for these types of services than for other goods and services. This, in turn, tends to increase the number of jobs in that segment of the service sector relative to other sectors, and thereby increase its share of total employment.

²⁷ S. Magun, The Rise in Service Employment in the Canadian Economy, *Relations Industrielles*, Vol. 37, #3, 1982.

²⁸ The income elasticity of demand for these services is greater than one, so a one percent rise in per capita real income results in a greater than one percent increase in demand for these services.

However, demand for other types of services, such as household, laundry and cleaning services has been declining as real income increases, lifestyles change, and washers and dryers are used in the home. In *the goods-producing area*, as real income per capita rises, demand for *durable* goods such as furniture, household appliances and automobiles rises more quickly than the demand for semi-durable or non-durable goods such as clothing, books, food, cosmetics, electricity, and fuels. Thus, *changing real incomes per capita affect the pattern of domestic demand for goods and services produced by various industries, the output from these industries, and ultimately, employment levels in these industries.*

Problems in Measuring Output and Productivity

Analysts have used changes in output from economic sectors to measure changes in demand, and thereby examined relationships between output and employment. But estimating the effect of various factors on demand and output (and hence, employment) from industrial sectors is fraught with pitfalls.

The output of goods-producing industries is relatively obvious. Manufactured goods require specific inputs and are sold at a known price. The statistics are relatively straightforward. But measuring real output from the services sector is a different matter. For many service industries, particularly non-commercial services (education, health, government), the unit of output is difficult to identify or quantify. Thus, statisticians often estimate output primarily as a reflection of labour input, which implies zero productivity growth. The issues in measuring real output will not be dealt with here. Suffice it to say that *as the analysis moves from goods-producing industries to commercial services, and then to non-commercial services, the problems increase significantly, with a corresponding decline in the meaningfulness of measures of output.* And this, in turn, causes problems for measures of labour productivity, since it is output related to man-hours of employment. In particular, inter-sectoral comparisons of productivity using available measures have some unknown degree of error, due to the difficulty of measuring output from parts of the service sector. For this reason, subsequent references to the service sector pertain only to *commercial* services, since output and productivity measures in non-commercial services cannot be compared with other sectors.

An Example: Output of the goods versus service sectors and the effect on the redistribution of employment between the two sectors.

Despite measurement problems, output figures are published for the major industrial sectors, and analysts have tried to determine how *different* rates of increase in output affect the distribution of employment. In particular, the shift of employment from the goods to the service sector has been studied.

It is generally believed that rising real incomes increase the demand for services more rapidly than the demand for goods. This, in turn, would lead to a shift in employment from the goods to the service sector. But Magun (1982), studying the 1950s to the mid-1970s, suggests this was not the case. At a time when real incomes rose, demand for services might have been expected to have risen faster than demand for goods. Yet, in looking at the goods-producing and service sectors, there was no evidence that the Canadian economy had experienced stronger demand for services than for goods. The goods sector's share of total Gross Domestic Product (i.e., total output in Canada measured in constant dollars) was virtually the same in 1976 as in 1951, at approximately 40%. Furthermore, the proportion of total government and consumer expenditures on services did not change between 1961 and 1971. This supported the contention that the demand for goods *relative* to services had not changed during the 1950s and 1960s. Clearly, rapidly rising demand in both sectors had created many new jobs, but as the output was rising at approximately the same rate, it did not contribute significantly to the redistribution of employment among the sectors. Yet redistribution of employment was significant: in 1951, approximately 53% of workers were in goods-producing; by 1971, the proportion had dropped to 38%.

By way of explanation, the study concluded that as per capita incomes rise, there *is* a tendency for the consumption of services to increase faster than that of goods (i.e., the income elasticity of services is greater than that of goods). This is offset, however, by *prices*. The *cost* of services increased faster than the cost of goods, at least in part because of lower productivity gains in the commercial service sector and because wages rose at approximately the same rate in both the goods and services sectors. As a result, between 1950 and 1971, prices for services rose twice as fast as those for goods. This dis-

couraged the purchase of services in favour of goods, and counteracted the effect of rising incomes. Thus, the shift of employment to the service sector during the 1950s and 1960s cannot be mainly attributed to a sharper rise in the demand for services than for goods.²⁹ It must be remembered that analyses of this type are based on uncertain output measures for the service sector. However, the difference between the trends in measured output and employment is so great that it is unlikely that it is totally caused by measurement error. Changes in demand for services as opposed to goods may have influenced the distribution of employment between the two sectors in the 1950s and 1960s, but it was unlikely the primary cause. These comments, of course, refer to the service sector as a whole. It is possible that for particular parts of the sector, such as the consumer services, rising demand may have played a strong role in the increase in that sectors share of employment. Another factor is the *variation* in productivity gains of the sectors. That is, the number of workers required to produce the output in demand. This will be examined in the next section.

It should be noted that output (and demand) trends for the 1970s do not match those of the 1950s and 1960s. While measured output rose at approximately the same rate in both the goods-producing and commercial service sector (annual averages of 4.8% and 4.9% respectively) during the 1950s and 1960s, between 1971 and 1982 *commercial services'* output grew much more quickly (an annual average of 4.3%) than did the goods-producing sector's output (1.7%). Thus, observations based on 1950s and 1960s data are unlikely to hold for the 1970s. This difference in output growth rates would have tended to produce more employment in service than in goods-producing industries during the last decade, thereby changing the employment mix.

This review has been at a very aggregate level. But in general, it is believed that changes in real income, lifestyles, and family size can affect demand, and consequently, employment in particular industries. And international events, such as the move to flexible exchange rates, more global competition in business, the tendency for large multi-

²⁹ Rather, the principal explanation for the growing importance of employment in the services industries lies in the sector differential rate of growth in labour productivity.

nationals to sub-contract much of their work to recently industrializing nations, and freer trade will all affect the demand for Canadian-produced goods, and hence, the industrial mix of employment in this country.

The Demand for Imports and Exports

For part of the economy, other demand-related factors can affect employment within industries. These are the demand abroad for Canadian goods (exports), and perhaps of more concern, domestic demand for imports. Industries face foreign competition not only when they export a significant part of their output, but also if imports supply the Canadian market with a significant proportion of the commodities produced by those industries. This is the trading sector of the economy, which accounts for approximately one-third of the domestic product. Basically, the trading sector coincides with the goods-producing sector, except for the construction industry, which does not trade. The service sector is largely non-trading. Finance, insurance, and real estate do trade in services, although this is not common.

Changes in trading patterns can influence the employment mix and the number of jobs available. This is an issue now because the trade policy agreements in force under GATT encourage less government intervention and fewer tariff barriers. In short, they encourage freer trade.

As the Economic Council pointed out,

Most would agree that multilateral trade growth has helped Canadian living standards rise in the past and could do so in the future. There is disagreement, however, on the question of how harmful the other effects of trade growth may be in changing the nature of Canada's industrial structure and forcing workers out of jobs and firms out of business.³⁰

³⁰ Economic Council of Canada, 1983, page 89.

Of interest here is the restructuring of industrial employment that comes about because of changes in trading patterns.

On the *export* side, Canada's record is quite good, and exports clearly tend to increase employment in some industries. A 1983 Economic Council study on technology, trade and income growth found that Canadian exports rose at a faster pace than the national economy as whole throughout the sixties and seventies.³¹ The most pronounced feature of the Canadian export position is the strengthening link with the American market, which absorbs approximately three-quarters of Canada's exports. From the point of view of employment patterns by industry, the growing demand for output brought about by increasing exports throughout the sixties and seventies would tend to have had a positive influence on employment in export-oriented industries.

More troubling is the effect of import competition on employment in manufacturing industries such as textiles, footwear, automobiles and steel. The concern is that manufacturing industries that are disappearing under the pressure of import competition are not being replaced by others that produce for export. "In a word, Canada is deindustrializing .. foreign competition is driving domestic producers of manufacturing goods to the wall."³² This argument suggests current import patterns are prejudicial to Canada's long-run prosperity. Yet, on balance, *after reviewing the evidence*, the Economic Council study concludes that "the manufacturing sector has not withered and is not withering in the face of international competition ... Canada is a far cry from deindustrialization. In our considered judgment, there is no evidence of this process even beginning."³³ However, the problems posed by import competition are not likely to abate during the 1980s. In the late 1970s the value of imports of goods and services was equal to almost one-third of Canada's GNP.

³¹ Ibid.

³² *Ibid.* page 97.

³³ *Ibid.* page 105.

Import penetration³⁴ did increase from 20% in 1966 to 30% in 1980 for the goods-producing industries. But at the same time, exports of the goods-producing sector gained ground. As a percent of domestic shipments, total exports rose from 21% in 1966 to 32% in 1980. Thus, both import-penetration and the export orientation of Canada's trading sector (mainly goods-producing industries) have been on the rise. Moreover, the picture is the same for the manufacturing segment of the goods sector: both imports and exports played a larger role in determining the demand for manufactured goods, and hence, employment levels. The importance of trade in shaping the Canadian economy was increasing, at least until 1980, and given the GATT treaties, is likely to continue.

But which industries are apt to be affected? Studying the manufacturing sector the Economic Council found:

Exports consistently exceeded imports in such industries as wood, paper and allied products, primary metals, and petroleum and coal products - all closely linked to and drawing upon the natural resource base that is considered to represent Canadian comparative advantage. On the other hand, imports were of considerable significance in such industries as textiles, leather, knitting mills and electrical products.³⁵

It is of interest to note that the effect of imports from rapidly industrializing Far Eastern countries such as South Korea and Taiwan on employment levels in manufacturing is still relatively minor. Just over 11% of Canada's foreign purchases in 1984 came from Asia (excluding the Middle East), 6% of which were from Japan alone. While small, this was an increase from 3.8% (2% for Japan) in 1960. The strong export link with the United States is mirrored by American imports, which make up about 71% of all imports to Canada.

There have been and will likely continue to be large and important changes in the allocation of labour among industries and economic sectors in response to change in trade, particularly as the trade

³⁴ The ratio of imports to total domestic availability of goods (produced domestically or by other countries). That is, imports as a percent of all goods consumed.

³⁵ Economic Council, 1983, page 113.

policy agreements in force under GATT, and other political pressures, encourage freer trade. To the extent that labour markets will not always function smoothly, there will be a continued need for effective labour market adjustment policies which will enhance the ability of individuals and industries to adapt to change in the world economy.

INDUSTRY VARIATIONS IN PRODUCTIVITY AND THE CHANGING EMPLOYMENT MIX

Beyond changes in either domestic or export demand, another factor can influence relative employment levels in industries – productivity change. More precisely, *variations* among industries in productivity growth result in a restructuring of industrial employment. If the output of two industries grows at the same rate, but productivity (output per worker) rises more quickly in one of them, then the relative weight of employment will shift toward the industry with slower productivity growth.

Before the effects of productivity changes on the distribution of employment are outlined, some explanations will help put the discussion in context:

1. Productivity usually refers to labour productivity, which is measured by output (in constant dollars) per employee or per man-hour worked. There are other productivity measures, but this is the most common.
2. The term *labour* productivity is misleading, as many other factors can influence productivity. The measure reflects not only the skill and effort of the labour force, but also technology and methods of production, levels of capital investment per employee, capacity utilization, managerial skills, work-flow, labour-management relations, and so on.
3. Productivity in the *non-commercial services* is virtually impossible to measure in this way, since the unit of output is difficult to define, let alone measure in constant dollars. As a result, non-commercial services' productivity change is implicitly assumed to be zero.

4. Over the past decade, the *rate of increase* of labour productivity in the *commercial* economy has fallen markedly in most industries and in most western industrialized nations. In Canada, the average annual rate of growth of output per man-hour over the 36 years between 1946 and 1982 was 3.7%. However, for the last 15 years it was 2.3%, and for the five years before 1982, 0.1%. While productivity accelerated in a few industries during the late 1970s (notably Services to Mining and Communications), it dropped in most others (Agriculture, Mining, Rubber and Plastics, Primary Metals, Metal Fabricating, Transportation, Utilities, and Wholesale Trade). Thus, the main problem is vanishing productivity *growth*, not a declining *level* of productivity. Also, while all major OECD countries experienced a slowdown in productivity growth, in Canada it was more severe.

Attempting to ascertain the reason for the declining levels of productivity since the early 1970s has become a major area of research and speculation in economics. While a number of factors have been advanced as possible explanations, it is probably fair to say that the causes are not yet fully understood. Some of the suggested reasons include:

- the movement of labour from high productivity sectors of the economy (goods-producing) to the lower productivity service sectors, and changes in the age-sex composition of the labour force;
- a slow rate of growth in aggregate demand and hence lower rates of capacity utilization, smaller production runs and generally a slowdown in productivity achieved through economics of scale;
- a change in the capital to labour ratio, although as noted by the Department of Finance in their 1983 Economic Review, this ratio has generally not declined in the post-1974 period relative to the 1966-73 period. Thus, this explanation does not appear to hold much validity, at least economy-wide. It may be important in certain industrial sectors;

- the large energy price increases since 1974 which reduced the use of energy in the production process, and could have made some capital stock obsolete. This slowdown in energy use would result in a slowdown in output unless it were offset by increases in the capital stock;
- the post-1973 surge in inflation, which may slow productivity growth by causing a changing and less efficient mix in factor inputs.

Many additional explanations – even more difficult to measure or test than those listed above – have been offered as possible explanations of the "productivity puzzle". These include a decline in the work ethic, a deterioration in the quality of management, a slowdown in the rate at which the labour force is increasing its human capital (education, training, work experience) leading to a slowdown in productivity that stems from this factor, declining R&D and hence a slower rate of technological change, increasing regulatory burdens by government on the private economy, and growth in the underground economy, which diverts output from the measured economy.

As mentioned, the causes of the productivity slowdown continue to be discussed by economists (e.g., see Daly and Rao, 1985, for a review of recent work), with no overall consensus. But many of the proposed causes are being rejected, particularly those related to the work ethic, changes in the training and education obtained by workers, changes in the age-sex composition of the labour force and other human-related factors. One researcher (Helliwell, 1984) suggests that "there does not appear to be strong evidence of a 'productivity puzzle' requiring explanation in terms of increasing regulatory burden, declining R&D, changes in the labour force mix, the growth of the underground economy, or any of the other structural factors that have been invoked to explain the post-1973 productivity declines."³⁶ His research suggests that changes in input factor proportions (mainly substituting labour for energy due to the high price of energy since 1973), and decreases in capacity utilization caused by slow growth in aggregate demand, low sales and low profitability explains almost all

³⁶ J.F. Helliwell, *Stagflation and Productivity Decline, 1974-82*, *Canadian Journal of Economics*, May, 1984, pg. 200.

the drop in aggregate productivity growth. Daly and Rao (1985), after reviewing recent work, conclude that the slower rate of growth in total output in the economy due to depressed demand was the main cause of the productivity slowdown. They argue that the economic slowdown contributed to the productivity slowdown through lower capacity utilization rates, a reduced ability of firms to be able to take advantage of scale economies in production, and the negative influence such a slowdown has on technical progress. Helliwell (1984) argues that decreased capacity utilization certainly plays a large role in the productivity decline, and that ultimately the productivity slowdown stems from the OPEC oil price shocks, the related increase in inflation and the slowdown in real GNP elsewhere in the world. The debate continues.

But the analysis of the productivity decline, while holding obvious implications for efforts to increase productivity, is not central to this work. Of importance here is the inter-industry *variation* in productivity growth.

Table 5 presents a sample of published data indicating the slower productivity growth in the commercial services compared with the goods-producing sector.

The Effects of Productivity Change on Total Employment

As mentioned earlier, all other things being equal, jobs will tend to be reshuffled toward industries with slower productivity growth, as has occurred in many parts of the service sector. Industries with rapid productivity increases *may* find that their share of total employment is decreasing. This is not necessarily true, as rapidly rising productivity may lead to lower costs, and hence rising demand, which could partially or completely obviate any employment loss. But it is necessary to consider the relationship between productivity and *total* employment growth. Job losses in some industries or sectors must be seen in relation to jobs created simultaneously in other areas of the economy. Employment in other industries or sectors can be created as productivity increases, real incomes rise, and demand patterns change. Most economists would argue, however, that it is necessary to consider the effect on total output and total employment. According to the

Table 5
Average Percent Change in Labour Productivity,
1951-61 to 1978-82

(Output per Man-Hour)

Sector	1951 to 1961	1961 to 1971	1971 to 1981	1978 to 1982
Agriculture	2.6	7.8	3.2	3.9
Manufacturing	4.0	4.5	2.4	0.1
Other Goods-producing	7.7	4.0	0.2	1.0
Sub-total Goods-producing	5.4	5.6	2.1	0.7
Commercial Services	1.9	2.8	1.2	-0.4
Total Commercial Economy	4.0	4.3	1.7	0.1

Statistics Canada, Aggregate Productivity Measures, 1982,
Catalogue No. 14-201.

Economic Council, "improving productivity will necessarily destroy jobs if total output remains unchanged; thus the real question is whether total output will be unchanged".³⁷ The Council noted that if output had remained unchanged after World War II, the number of jobs would have been halved. But since total output has more than doubled, employment, too, has risen.

An increase in productivity makes it possible for aggregate demand to rise and stimulate job creation without any acceleration in the inflation rate. This increase in demand comes about either through an increase in consumption or investment by governments, business or individuals, made possible by higher real wages and profits resulting from productivity improvements.³⁸

Technological change is one way of improving productivity and is currently receiving much attention. The author of major economic study of technological change observed:

An overview ... seems to be that technological change encourages increased output. If nothing else, we can state that technological change yields the opportunity to increase economic welfare. As to who gets the benefits (through higher employment levels, higher profits and wages, etc.) and who suffers the costs (through technological unemployment, deskilling, lower wages, poor employment stability, environmental pollution, etc.), and how much of the potential is realized, we are not in a position to say.³⁹

From the point of view of the trading sector, productivity and technological change take on special meaning. In his study, *Economic Analysis of Technological Change*, P. Stoneman notes:

³⁷ Economic Council, 1983, page 4.

³⁸ Economic Council, 1983, page 5.

³⁹ P. Stoneman, *The Economic Analysis of Technological Change*, 1983, page 196, (comments in brackets those of the author).

It is argued that a failure to innovate where other countries do will drastically affect employment opportunities (in trading industries and others through secondary effects), but innovation faster than others will act effectively to compensate for any direct job losses (due to technological change). However, much of this work depends on belief rather than strict empirical testing of which we have no examples.⁴⁰

Variations in the rate of productivity and technological change in different industries and sectors play a large role in the distribution of industrial employment. Stoneman's study on technological change concludes:

As a new technology is used more widely, so the average cost of production should fall, and the potential arises for increases in consumer welfare. At the same time, the use of new technology can yield profits to its users.... However, as the new processes are being used, so the old are replaced. This may for a while stimulate further development, but will, in general, imply the decline of old industries. *As industries rise and fall*, so the demand for labour will be subject to a continued recomposition in terms of level, skill and geographic location.

So the distribution of employment among industries is affected both by changes in demand for goods and services and variations in productivity growth. But what was the relative importance of these two factors in the recent past? One way of addressing this question is to use input-output analysis.

⁴⁰ P. Stoneman, 1983, page 260 (comments in brackets those of the author).

Relative Importance of Changing Final Demand and Changes in Productivity

One can use the Statistics Canada's input-output model and data to examine the relationship between employment growth and (1) changes in final demand and (2) productivity/technological change in the commercial economy.⁴¹ Productivity and technology are, of course, closely related, since technological developments can increase productivity. In input-output analysis, "technological change" is really the change in production processes as reflected in the mix of inputs used to produce the industries' outputs or commodities. That is, the current technology is represented by an input-output matrix which displays the mix of inputs used to produce the industries output. A change in this matrix is assumed to be indicative of a change in technology.

Such an approach was used by Magun (1984) to study changes during the 1971-79 period based on simulations on Canadian Input-Output tables conducted by Statistics Canada. Some of the data from this project are re-worked in this section. It is, however, necessary to understand that there are many ways of analyzing the effects of technological and productivity change on employment, of which the macro-economic input-output approach is only one.⁴² And input-output analysis is *not* a particularly appropriate method with which to analyze the effect of technological change *alone* (as distinct from other factors affecting productivity) on employment.

One reason is that changes over time in the mix of inputs (factors) used by an industry result not only from changes in technology but also from relative changes in the factor (input) prices. Thus, technological change may be neutral (that is, neither labour-saving nor labour-using), but there may be a substitution of one factor (input) for another simply in response to relative price changes in the factors. As one input becomes relatively less expensive, it may be substituted

⁴¹ Non-commercial services are excluded from this analysis because of the problems in measuring output and productivity.

⁴² See Stoneman (1983) for a review of the micro and macro-economic approaches to the analysis of technological change on output and employment, Chapters 11 and 12.

for another. This would result in a change in the input-output matrix, and possibly a change in an inputs' share of total inputs. The net result might be, for example, a change in labour as a proportion of all factor inputs. But this could be caused by a relative change in factor (input) prices, not by the introduction of labour-saving technology. Input-output analysis fails to remove the effect of the changes in relative factor (input) prices. Hence, using input-output analysis to estimate the impact of new technology alone (as distinct from other productivity-related factors) on employment does have some shortcomings.

Approaches to the measurement of technical change bias (e.g., whether technology is neutral, labour-saving or labour-using) after accounting for relative changes in factor prices can be found in Binswanger (1974), Sats (1970) and Jorgenson (1981).

If one does not attempt to look at technological change alone, but rather at the *overall* effect of changes in productivity on employment, (whether due to technological changes, substitution among types of input, upgrading of labour skills, or numerous other reasons) then input-output analysis is useful.

In this case, input-output splits the *growth of employment* from one year to the next into two components:

1. growth due to *changes* in the final demand⁴³ for various goods and services, and
2. growth due to changing production processes and productivity levels.

From a causal perspective, these two components are interrelated. Increases in productivity may increase output, by influencing demand. Greater productivity often means less expensive goods, which can, in turn, heighten demand (and output) for these goods. Input-output analysis ascribes changes in employment levels to each of these components, but it does not explain *why* they themselves changed. Fur-

⁴³ This includes changes in the *level* of demand as well as in the *mix* of demand for goods and services from various industries.

thermore, it cannot be assumed that it is possible for one of the two components to change without affecting the other.

And another caveat is necessary before reporting the findings. As mentioned earlier, measuring output, and hence productivity, in parts of the service sector presents some difficulty. The analysis assumes productivity measures in the major sectors are directly comparable, and this may not be true. It is not known how much this measurement problem influences inter-industry comparisons of productivity. This means that the findings should be interpreted as "ball-park" estimates, rather than precise calculations.

Overall, the input-output analysis run with 1971 and 1979 data found that it was possible to produce the same 1971 final demand basket of goods and services with 8% less labour by using 1979 production process (i.e., input mix) and productivity levels than by using that of 1971. In other words, technological and productivity change over the eight-year period made it possible to produce the same bill of goods and services with 8% fewer workers.⁴⁴ However, the influence of rising final demand on employment was positive and very large, more than offsetting the negative effect of technological and productivity change. The net result was an increase of 1.7 million jobs between 1971 and 1979.⁴⁵

⁴⁴ This 8% difference in the number of employees was not only a result of long-term changes in productivity and production processes. For example, the mix of full-time/part-time employees may have changed. Also, 1971 was a period of slow economic activity, while 1979 was the peak of a business cycle. Output per worker is almost always higher at a peak than in a slowdown. Thus, part of the difference in productivity would be due to short-term cyclical effects (position in the business cycle) rather than long-term productivity changes. As noted earlier, it is very difficult to separate temporary cyclical effects from prolonged trends.

⁴⁵ S. Magun, *The Effects of Technological Change on the Labour Market in Canada*, 1984, page 15.

The effects of the two factors on employment growth are shown for selected segments of the economy in Table 6 and Chart 12. Within the *goods-producing sector*, changes in productivity and production processes had a negative effect on employment in *manufacturing and agriculture*, but little influence on the *construction* industry.

Within the *commercial services* sector, the negative effects of changes in productivity on employment were strongest by far in *distributive* services, particularly the transportation and communication industries. The latter experienced the highest productivity gain of any industry in the 1970s. In both the *producer and consumer services area*, the effect of productivity change was to employ more workers, not fewer, as in the other sectors. That is, it was labour-using rather than labour-saving. This occurred despite concerns that computerization would result in net job losses particularly in the producer services sector, which deals largely with the processing, analysis and dissemination of information. It is quite possible, however, that the major impact of the micro-computer occurred after 1979, and therefore, remains to be detected in subsequent data.

It is interesting to note that the sectors with the largest increase in employment shares - notably, producer and consumer services - were those with productivity changes that were labour-using rather than labour-saving.

However, the main interest here is the effects of final demand and productivity/technological change on the redistribution of employment among industries. As an illustration, two extreme cases will be compared: manufacturing and consumer services. The latter includes accommodation and food services, personal services, amusement and recreational services, and miscellaneous services. Employment in manufacturing increased 13% between 1971 and 1979.⁴⁶ The input-output analysis decomposed this into a positive influence of 41% due to changes in final demand, and a negative effect of 27% because of rising productivity and production processes.

⁴⁶ Based on data from establishment surveys. This is slightly lower than the growth indicated by household survey data.

Table 6
Employment Change Between 1971 and 1979, by Contributors to Change,
Goods-producing and Commercial Services Industries

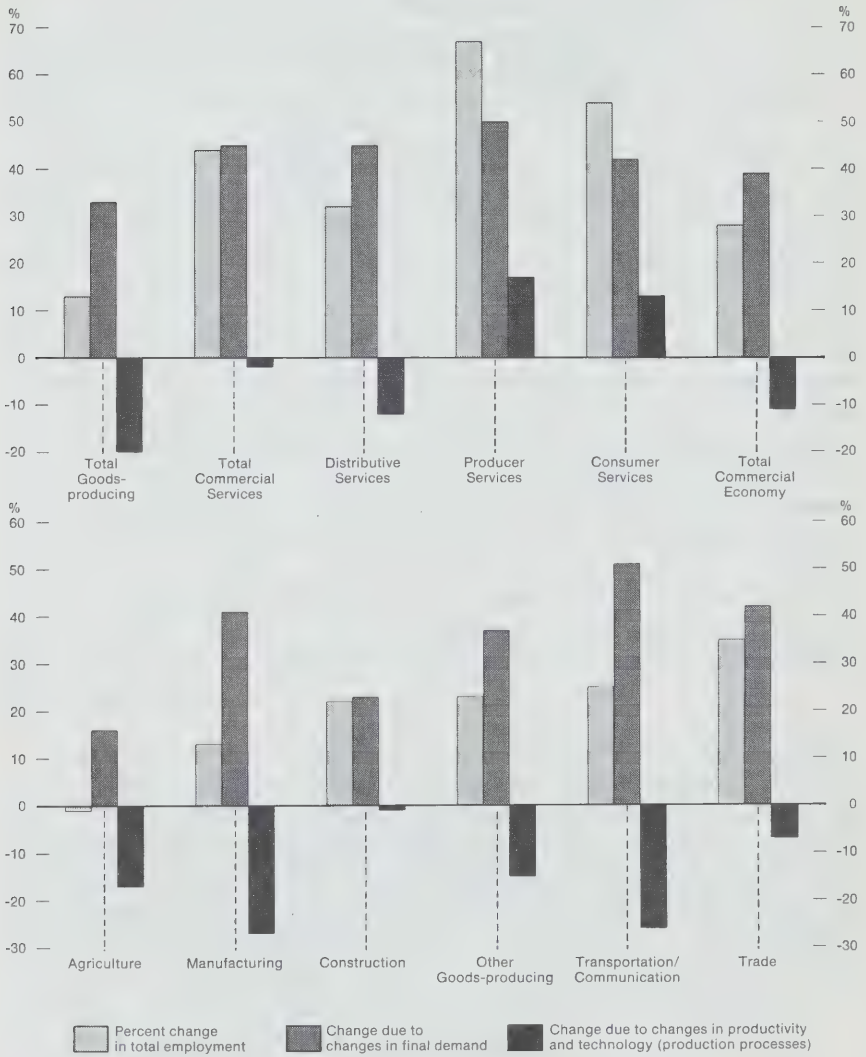
Sector	Employment (thousands)		Change in Employment (thousand)			% Change in Employment		
	1971	1979	Total	Due to Final Demand	Due to Techno- logical/ Produc- tivity Change	Total	Due to Final Demand	Due to Produc- tivity/ Techno- logical Change ²
Goods-Producing								
Agriculture	502	497	-4	+82	-86	-1%	+16%	-17%
Manufacturing	1,638	1,853	+215	+664	-447	+13	+41	-27
Construction	558	680	+123	+129	-7	+22	+23	-1
Other Goods ¹	266	326	+60	+98	-40	+23	+37	-15
Sub-Total: Goods-produ- cing sector	2,964	3,356	+394	+973	-580	+13	+33	-20
Commercial Services								
Transportation/Communi- cations	520	651	+131	+266	-135	+25	+51	-26
Trade	1,274	1,721	+447	+534	-87	+35	+42	-7
Sub-total: Distributive Services	1,794	2,372	+578	+800	-222	+32	+45	-12
Producer Services	604	1,010	+406	+303	+103	+67	+50	+17
Consumer Services	579	895	+315	+242	+73	+54	+42	+13
Sub-Total: All Commercial Services	2,977	4,277	+1,300	+1,345	-47	+44	+45	-2
TOTAL	5,941	7,633	+1,693	+2,319	-626	+28	+39	-11

¹Forestry, Fishing, Mining, Quarries, Electric Power, Gas, Other Utilities.

²Changes in the mix of inputs used in the production processes, market shares and labour productivity as measured by output/employee.

Source: Derived from data in S. Magun, The Effect of Technological Change in the Labour Market in Canada, 1984.

Chart — 12
Percent Change in Employment Between 1971 and 1979, Selected Industries



Source: Table B6

By way of contrast, employment in consumer services rose 54%. The increase attributed to changes in final demand was approximately *the same* as for manufacturing (42% compared with 41%). But more important, the changes in productivity were such as to require more labour, not less. Consequently, the productivity/technology factor contributed another 13% to the growth of employment in consumer services, compared with a 27% loss in manufacturing. The combined effects of the two factors resulted in an overall 54% increase of employment in the former, but just 13% in the latter industry group. Thus, *differences* in final demand had little to do with the more rapid growth of employment in consumer services when compared with manufacturing; most of the disparity was due to *differences* in productivity.

This is an extreme case, but similar patterns emerge when the entire commercial service sector is compared with the goods-producing sector. Employment increases due to final demand were higher in commercial services than in the goods-producing sector (+45% versus +33%). And while productivity change had little overall effect on employment in commercial services, they were responsible for a 20% *decline* in the goods-producing employment levels. The net effect was a shift in employment toward the commercial services sector.

By examining the *number* of jobs, the relative importance of final demand and productivity/technological can be assessed. In 1971, each of the two sectors had roughly the same number of employees - a 50-50 split. By 1979, commercial services accounted for 56% of the total in the two sectors, while the proportion in goods-producing industries had dropped to 44%. Commercial services had gained 906,000 *more* jobs than the goods-producing sector. Of this gain, 372,000 (four out of every ten) jobs were due to *differences in the rate of growth of final demand*, and 533,000 (or six out of every ten) jobs, to *differences in the rate of growth of productivity*. Both factors, then, contributed significantly to the redistribution of employment between the goods-producing and commercial services sectors during the 1971-79 period.

Since the 1981-82 recession, it is likely that changes in demand have affected employment levels much more than during the 1971-79

period, while the influence of variations in productivity levels among industries has diminished. The recession was, of course, dominated by a decline in the demand for goods. It's the impact on the goods-producing sector and on the industrial mix of employment was reviewed earlier.

Input-output analysis can address the effects of these two factors, but not others. And as mentioned at the beginning of this section, there are other possible reasons for a redistribution of industrial employment.

CLOSING COMMENTS

This study was prompted by research into the relationship between retraining programs and changes in the structure of industrial employment, which leads to changes in occupations in demand, and thus, the type of training required. As noted earlier, interest in many labour market adjustment programs (retraining, relocation, improved labour market information, etc.) is based on the premise that phenomena such as declining industries and their effects on occupational demand and unemployment result from *long-term* structural and technological change, not just a temporary decline in the demand for particular goods and services. But, it is difficult to differentiate longer-term structural changes from short-term cyclical trends. And this difficulty can lead to problems in policy and program formulation.

As summarized by Standing in his discussion of structural unemployment:

The view that structural (or technological) unemployment exists or has grown lies at the heart of numerous active manpower policies that have been launched in this as in other previous periods of high unemployment. Training and retraining for the unemployed, relocation, assistance schemes and special subsidies to improve the relative employment prospects of target groups have absorbed enormous financial resources. Most should be welcomed in their own right. But if

the unemployment is not structural (or technological), the emphasis given to these policies may breed resentment and cynicism about their inefficiency among both those for whom they are designed and those responsible for implementing them. A young man who is told that if he accepts a place in a public training scheme, he will become more employable, but who, once trained, finds no jobs, will be disinclined to retain those skills or learn a new skill when a real job becomes available. And one man's experience does not go unnoticed by his peers.⁴⁷

One source of structural unemployment⁴⁸ is the redistribution of jobs among economic sectors, and the change in occupational skills required to fill the new jobs. There are, however, numerous other sources of structural unemployment, and the changing industrial structure appears not to have been particularly important during the 1970s,

⁴⁷ G.Standing, The Notion of Structural Unemployment, *International Labour Review*, March-April, 1983, page 150.

⁴⁸ It must be noted that structural unemployment and change can be defined in more than one way. Here, the industrial structure alone is considered. It is likely that even with slow change in the mix of employment by industry, occupations within industries may be transformed because of technology or for some other reason, leading to structural and technological unemployment. However, structural unemployment is a difficult concept to define or measure. It could be interpreted as that proportion of total unemployment which is *not* responsive to economic growth and increasing demand, and would remain even at the peak of a business cycle. It is generally accepted that structural unemployment has been increasing through the seventies and eighties. Some factors that are said to lead to structural unemployment include changes in the industrial distribution of employment (which is examined here), a mismatch between skills available and those in demand, geographical mismatches in the supply of and demand for labour, institutional arrangements in the labour market such as minimum wage laws and unemployment insurance, and changes in the demographic composition of the labour force (larger proportions of young people and women).

as the pace of change was slowing compared with earlier decades.

There was certainly no structural change affecting a single sector of the economy in the 1970s to compare with the movement of workers from the agricultural sector to the non-agricultural economy during the 1940s and 1950s. In the 1980s, the recession hit the goods-producing sector extremely hard, producing much unemployment and an almost instantaneous shift in the distribution of employment away from the goods-producing and towards the services sector (particularly the consumer and producer services). But how much of this largely cyclically-induced shift will remain, and how much will disappear as the recovery continues in the goods-producing sector remains to be seen. It is also important to remember in discussions of the industrial restructuring that it is always going on, and has always gone on. One analyst estimated that two-thirds of the jobs that existed in industrialized nations a hundred years ago have been "eliminated", but three times as many people are at work. And Canada is more automated than ever before, yet a larger proportion of its population are employed than at any other point in history.

It is also worth noting that concern about technological change, the import competition on jobs and the adverse effects of industrial restructuring have been raised before.

As observed by Ostry and Zaidi, "The serious recession of the late 1950s ... engendered widespread fear of technological unemployment and deteriorating international competitiveness."⁴⁹ Sustained economic growth in the sixties proved these fears to be unfounded, as rapidly rising demand for goods and services "solved" what seemed to be serious structural problems. But this is not to suggest that the 1980s will resemble the 1960s. The 1981-82 recession was far more severe than that of the late 1950s, leaving Canada with more serious economic problems.

And this is not to imply that industrial restructuring and job loss in some industries does not introduce serious problems for many people. The unemployment and necessary adaptation and change that results is often very difficult, particularly for older workers and those

⁴⁹ Ostry and Zaidi, 1979, page 135.

without the necessary skills to provide flexibility in the labour market.

But if the pace of industrial restructuring was slowing up to the 1981 recession, what of the coming decade?

Will jobs disappear at a rapid rate in some sectors of the economy to be replaced by different types of jobs in others? One argument is that during the recession, firms learned to produce a given amount of output with fewer employees, and that even when demand rises, many jobs that disappeared will never return. If this is so, productivity in the goods-producing sector should also start to increase once again.

The ultimate effect of rising productivity on employment in the goods-producing sector is not clear. Historically, *in general*, increasing productivity and technological change have been associated with lower costs, greater demand and output, and thus, more jobs. Consequently, rising productivity within a sector does not necessarily mean an employment decline.

On the other hand, it has been observed in this review that the economic sectors with the highest growth rate and the largest increase in share of employment (notably, producer and consumer services) were those with productivity and technological changes that were labour-using rather than labour-saving.

Thus, it is possible to summarize the evidence reviewed here by stating that for *broad* sectors of the economy, rising productivity has historically been associated with more rapidly rising output, which more than offset the declines in employment that productivity increases tend to cause. (This may not always hold for particular industries, such as clothing, textile and leather, where demand and output did not offset productivity gains.) A substantial number of jobs may be created in sectors with high productivity gains, but their employment growth may be *relatively* slow, compared with the more rapid job creation in other industries, such as consumer and producer services. However, industries with more rapidly rising productivity may contribute to the ability of others to provide more jobs, through the demand for "intermediate" services, and the creation of wealth (higher wages, profits, investment). And of course, in speculating about

employment growth, other factors must be considered such as relative wage rates among the sectors and the fact that goods-producing industries face direct foreign competition, while consumer and producer services do not.

Overall, if productivity in the goods-producing sector were to begin a period of sustained growth (and ignoring the effects of changes in demand), this could, indeed, mean continued redistribution of employment toward the service sector, and would result in major structural change. And it is precisely such an increase in productivity that most planners and analysts are seeking in the hope that it would promote rising real incomes, profits, demand for goods and services, and investment, as has happened to do in the past.

But there are other eventualities involving structural changes that could affect the redistribution of employment. The movement to freer trade, bringing import competition from developing countries, could depress employment in some manufacturing industries. And since demand for many distributive and producer services is linked to the output of manufacturing and other goods-producing industries, employment in commercial services could be affected. As the Economic Council points out, however, it is possible that the strong export demand of the past, which the Council expects to continue, could increase employment in some industries, while rising import competition would depress employment in others. Other authors believe that technological change, particularly micro-computers, will raise productivity in the more information-dependent service industries, especially producer services. As has been shown, if productivity were to rise at a faster rate in these industries than in other parts of the economy, this, too, would lead to a redistribution of employment.

All of these possibilities could result in major changes in the industrial structure of employment over the next decade, to say nothing of the *level* of employment and unemployment. In fact, it might be argued that the trends are already evident because of the recession (e.g., the decreased share of employment in the goods-producing sector). But it is difficult to know which employment trends observed since 1981 are long-term, and therefore, require policy and program formulation, and which are *relatively* short-term effects of the decreased domestic demand, which is slowly recovering.

This analysis has confirmed that the pace of change in the redistribution of employment among industries was slower during the period leading up to the recession than in earlier decades. Overall, economic factors such as rising GNP, rising real disposable income, variations in productivity growth rates among industries, and technological change influence the industrial structure of employment. As productivity gains and economic growth slowed, and real disposable income levelled off and fell slightly, so, too, did the redistribution of employment among industries. The 1981-82 recession produced a marked cyclically-induced shift in the industrial mix of employment away from the goods-producing sector. Whether this shift will remain or perhaps even increase as recovery continues is an open question.

SECTION 3

SUMMARY

The following is a condensed version of major observations and findings in Sections I and II.

1951 TO 1981

- The pace at which the *service sector* was increasing its share of the labour force⁵⁰ had slowed considerably by the 1971-81 decade. Its share rose from 47% in 1951 to 62% in 1971, and to 66% in 1981.
- Expansion of the service sector slackened largely because of slower growth of the *non-commercial (public) sector* during 1971-81. After a rapid increase from 12% in 1951 to 22% in 1971, the public sector's share of the labour force remained constant between 1971 and 1981. Slowing growth in federal public administration and education was largely responsible.
- During the 1971-81 period, the service sector's rising share of the labour force was due exclusively to the strength of *commercial services*. And within the commercial services, employment in *producer services* (professional services to management, financial institutions, insurance and real estate firms, etc.) grew the most rapidly: an average 6.2% annually between 1971 and 1981. This group of industries had the highest growth rate in all three decades, increasing its share of the labour force from 3.8% in 1951 to 9.5% in 1981.

⁵⁰ In this report, the term labour force refers to the *experienced* labour force, which includes all employed individuals plus unemployed persons who had worked during the previous 18 months. Data on the employed alone are also used.

- During all three decades, labour force and employment growth were higher in the services than in the goods-producing sector. However, it is not a case of the once-strong and rapidly growing goods-producing sector of the 1950s deteriorating substantially by the 1970s. Different data sources show somewhat different pictures of this sector, particularly for manufacturing. But employment and labour force growth in the goods-producing sector (excluding agriculture) was higher in the 1971-81 period than during the fifties, although the sixties probably saw the highest growth rate. During the 1971-81 period there was a slowdown in manufacturing employment growth, and an upturn in other goods-producing industries, notably resource-based industries such as mining, oil, and natural gas.
- Research on both the Canadian and American labour market suggests that most jobs created during the 1970s were in small enterprises, the majority being in the commercial services sector. That sector contributed 55% of the net new jobs created in Canada during the seventies. However, the goods-producing sector played a stronger role in job creation here, contributing 22% of the net new jobs during 1971-81 compared with 11% in the United States.
- Based on the analysis of 41 industries, before the recession the restructuring (redistribution) of employment among industries and sectors had slowed considerably. The pace of redistribution of the labour force among industries (excluding agriculture) between 1971 and 1981 was only half what it had been during the fifties. Thus, as real income growth, productivity gains and economic activity slowed in the 1970s, so, too, did the pace of redistribution of employment among industries.

THE POST-RECESSION PERIOD

- The 1981-82 recession radically altered most of these trends, at least temporarily. As in most recessions, the goods-producing sector was hardest hit: the number employed dropped 14% between July 1981 and December 1982 (seasonally adjusted). Despite relatively rapid employment growth in the goods-producing sector in 1984 (up 3.2% over 1983), which was led by manufacturing (up 4.5%), the number of employed in the sector remained 7.6% below the pre-recession (1981) level. Thus, the service sector's share of total employment increased from 66.3% in 1981 to 68.8% in 1984, not because of rapid growth as during pre-recession periods, but rather because of the cyclical downturn in the goods-producing sector.
- The recession caused substantial re-ordering of industry leaders and losers in terms of employment growth. The strongest performers before the recession - services to business management, accommodation and food services, mines/oil and gas wells - all disappeared from the fastest-growing list for the 1981-84 period.
- But the distribution of employment among sectors for the 1981-84 period cannot be compared with pre-recession times and considered part of a long-term trend. Obviously, the business cycle greatly affects the distribution, and must be considered in any analysis seeking to delineate long-term structural changes.
- To seek some guidance as to what might occur in the longer-term, and to give more meaning to the trends just outlined, two causes of change in the industrial mix of employment are summarized: (1) longer-term changes in the demand for (and hence output of) particular types of goods and services; and (2) variations in the growth rate of productivity in different industries and sectors.
- The changing level of real income is one of the factors that affects the demand for, and hence the output of, goods and services. Traditionally, increases in real income (which occurred during the post-World War II period until the late 1970s) have been associated with disproportionate growth of the demand for

services such as medical care, recreation, hotels and restaurants, communications and transportation. In the goods sector, rising real incomes have been associated with large increases in the demand for durable goods and smaller increases in the demand for non-durables. These changes in demand can influence output levels of various industries, and hence, employment. Demand for various goods and services is also affected by other factors, including changes in lifestyle, family composition, the amount of leisure time, and the relative prices of the goods and services. And international events, such as the move toward global competition in business, the tendency for multinationals to subcontract their work to recently industrializing nations, and freer trade all affect the demand for Canadian-made goods.

- For the *trading sector* of the economy, which is almost synonymous with the goods-producing sector excluding construction, import and export demand affect the employment mix. Canada has increasingly become a trading nation, with both import penetration and the export orientation of the trading sector (mainly the goods-producing sector excluding construction) on the rise.
- Besides changes in the demand for goods and services, *variations* in productivity (output per man-hour) among industries can influence employment in different industries. For example, a recent study concluded that the service sector's increasing share of employment during the fifties and sixties was due largely to *differences* in productivity growth in the goods-producing and services sector. The former demonstrated much more rapid gains in measured productivity.
- An input-output analysis employing 1971 and 1979 data for the commercial economy (excluding public services) found that both factors (changing levels of output and productivity) played a role in the commercial services sector increasing its share of employment. Two-fifths of the gain in commercial services employment over goods-producing employment resulted from changes in the output of goods and services, and three-fifths from differences in the rate of growth of productivity and technology.

-
- During the 1971–1979 period, the industries whose share of total employment tended to be reduced by productivity gains (i.e., the effect was labour-saving) included manufacturing, mining/oil and gas wells, agriculture, and distributive services (mainly communications and transportation). Those for which productivity either had little effect or actually tended to increase employment relative to other sectors (i.e., the effect was labour-using) included construction, producer services, and consumer services.
 - Thus, sectors with the largest increases in employment shares were those with productivity and technological changes that were labour-using rather than labour-saving, notably producer and consumer services. However, the difficulty of measuring commercial services' output and productivity, and in particular, of making inter-industry comparisons applies to most of this work, so the results should be interpreted as "ball-park" estimates of the magnitude of the effects, rather than precise calculations.
 - This is not to advocate slow productivity growth. A slowdown in productivity growth in almost all industries and industrialized countries is one of the major concerns of economists and business people. It must be remembered that productivity, technological change and increases in demand and output are not independent – a change in one affects the others. Economists argue that an increase in productivity makes it possible for real wages and profits to rise, stimulating demand and creating jobs through greater consumption or investment.
 - Rising productivity in a particular sector does not necessarily mean it will experience an employment decline. For broad sectors of the economy, rising productivity has historically been associated with greater output, which more than offset the negative effects that productivity increases can have on employment. (This may not always hold for particular industries, such as clothing, textile and leather where demand and output have not counterbalanced productivity gains.) Although a substantial number of jobs may be created in sectors with high productivity gains, their employment growth may be *relatively* slow, compared with the rate of job creation in other sectors (ignoring, for the moment, large sectoral variations in the demand for goods and

services). Available data and analysis suggest that is what occurred throughout the fifties, sixties and seventies in the consumer and producer services sector. In the long-run, this results in a change in the mix of jobs, affecting the skills required, occupations in demand, and possibly, income levels (as some sectors create higher-paying jobs than others).

- A number of eventualities involving structural change could affect the employment mix in the future. Some are:
 - The possibility of rising productivity in the goods-producing sector, as firms have learned to produce more with fewer workers because of their experience during the recession.
 - The possibility of high productivity gains in producer services, which are involved in the analysis, processing and dissemination of information, and hence, can potentially make productivity gains through the micro-processor and other technological innovations.
 - The possibility of increased demand for goods from export-oriented with industries, and simultaneously a decline in the demand for goods from some Canadian industries facing import competition, if the movement to freer trade continues.

Appendix A

DATA SOURCES

Data for all years⁵¹ used in this report are classified according to the 1970 SIC. Census data for 1951 to 1981 were converted to the 1970 SIC by the Census Group in Statistics Canada.

Data Sources and Coverage

Census data are used to examine trends *from 1951 to 1981*. These data were chosen because:

1. they are available on a consistent basis over that period;
2. they provide information on a number of industries (41) large enough to permit a detailed examination of trends; and
3. they cover the entire economy. Figures from other common sources, including establishment surveys and the Labour Force Survey, do not meet these requirements for the 1951 to 1981 period.

Ideally, the data should pertain only to the employed population. Unfortunately, employment data that meet the above requirements are not readily available. Therefore, it was necessary to use the *experienced labour force*, which includes all employed persons *plus* the unemployed who had worked during the previous eighteen months. The unemployed were coded to the industry in which they were last employed.

⁵¹ Except 1984, when the Labour Force Survey converted from the 1970 to the 1980 SIC. Differences between the 1970 and 1980 SICs at the level of detail in this report are minor.

Thus, an industry's experienced labour force is slightly larger than the number actually employed in that industry. However, the focus of this report is on general patterns, which are basically the same whether data refer to the experienced labour force or employment.

For the more recent period of 1971 to 1984, it was possible to use employment data from both the Labour Force Survey and the Census.

Census Data as They Reflect Long-Term Trends

As mentioned earlier, short-term downturns or upswings in the economy can influence the distribution of employment among industries. Goods-producing industries typically experience a more pronounced slowdown during a recession than do service industries, and a more rapid expansion during recoveries. Thus, employment statistics collected at the bottom of a business cycle would show a much different picture than those gathered at the peak. For this reason, the possible influence of short-term cyclical phenomena on long-term trends must be considered. However, recessions and slowdowns are unlikely to have significantly influenced the findings before 1981, because all Census dates were in roughly the same stage of the business cycle – either well into an expansionary period or just before a decline:

June 1951	End of expansionary phase, just before 1951 recession.
June 1961	Expansionary phase, about six months after low point of 1960 recession.
June 1971	Expansionary phase, about six months after low point of 1970 slowdown.
June 1981	End of expansionary phase, about one year after low point of 1980 recession and just before 1981-82 recession.

Given the positions of the Censuses in the business cycle, short-term cyclical effects would not likely invalidate comparisons among years. Certainly there are no effects like those witnessed since 1981.

Comparison of Establishment and Household Survey Data

Many analyses of employment trends by industry are based on data from establishment surveys, rather than from household surveys. It is felt that the household surveys present greater classification problems when using SIC codes. However, establishment data would not permit a comparison of the three decades, as they are only available since 1961. And establishment data do not provide information on other characteristics which will be used in Part II of this analysis (which will be done if time and resources permit). In particular, data on employment by sex, and the split between full- and part-time work are available from household surveys, but not from establishment surveys. For these reasons, it was decided to base the analysis on household data from the Census and Labour Force Survey.

Tables A1 to A3 compares employment trends from the three sources - establishment surveys, Census, and the Labour Force Survey - at an aggregate level. Data were not available from all sources for all years, but comparisons are made where possible. The major observations are:

- Employment data from the Census and the Labour Force Survey tend to be similar, and show the same basic trends.
- Trends based on employment data from establishment surveys tend to differ in some cases from those based on household data.

In particular:

- Growth in *goods-producing sector* employment is *higher* in the household data than in the establishment data for the 1971-81 period (e.g., manufacturing: 23% and 15%; construction: 31% and 23%; for the household- and establishment-based estimates, respectively). Growth rates for the 1961-71 period were quite similar in the Census and establishment based data.
- Growth in *commercial services employment* is *lower* in the household data than in the establishment data for the 1971-81 period (50% compared with 57%).

- Growth in *non-commercial services employment* is *higher* in the household data than in the establishment data for the 1971-81 period (38% compared with 30%).
- Growth rates in all industries over the 1971-81 period tend to be *slightly higher* in the Census experienced labour force data than in employment data, because the unemployed component of the experienced labour force grew between 1971 and 1981 (overall, the experienced labour force grew 42% or an average 3.6% annually, employment 39% or an average 3.3% annually). However, the industry shares (or distribution) are basically the same in the two data sets.

The overall effect of these comparisons on the analysis is that:

- The goods-producing sector appears slightly stronger in the 1971-81 period than would have been the case if establishment data had been used for this analysis.
- Data on the experienced labour force overestimate growth in all sectors during the 1971-81 period compared with other periods, although not greatly. Whenever the 1971 to 1984 period is discussed, employment data are used.
- Using the Census experienced labour force data rather than employment data has little effect on the analysis of the *distribution* or *redistribution* among industries, as the unemployed component is small and exists for all industries or sectors.

Table A1

EMPLOYMENT as Measured By Three Major Sources: Census, Labour Force Survey and Establishment Surveys, 1961, 1971 and 1981

Industry	Employment						Experienced Labour Force Census - June 1		
	Labour Force Survey (annual average)		Census - June 1		Establishment Survey (annual average)		1961	1971	1981
	1971	1981	1971	1981	1961	1971			

".." data not available.

Table A2
PERCENT DISTRIBUTION OF EMPLOYMENT AS MEASURED BY THREE MAJOR SOURCES: Census, Labour Force Survey and Establishment Surveys,
1961, 1971 and 1981

Industry	Employment							Experienced Labour Force Census - June 1		
	Labour Force Survey		Census - June 1		Establishment Survey					
	1971	1981	1971	1981	1961	1971	1981	1961	1971	1981
Mines, Oil and Gas Wells	1.9	2.0	1.9	1.9	2.3	1.9	2.0	2.1	1.9	1.9
Manufacturing	23.5	20.4	22.8	20.2	28.3	24.7	20.7	25.1	23.0	20.2
Construction	6.5	6.3	6.9	6.5	6.1	5.8	5.2	7.9	7.2	6.8
Sub-total	31.9	28.7	31.6	28.6	36.7	32.5	27.9	35.1	32.1	29.0
Transportation, Communication and Other Utilities	9.4	8.8	9.1	8.7	12.5	10.3	9.3	10.9	9.1	8.5
Trade	17.8	18.1	17.3	17.9	16.3	16.7	17.9	18.0	17.3	17.8
Finance, Insurance and Real Estate	5.3	5.7	4.9	5.8	4.2	4.7	5.9	4.1	4.8	5.6
Other Commercial Services	..	15.9	12.5	15.1	8.4	10.8	15.3	11.7	12.8	15.7
Sub-total: Commercial Services	..	48.4	43.9	47.4	41.5	42.5	48.4	44.9	44.1	47.7
Non-commercial Services	..	15.5	15.8	15.7	14.6	17.9	16.9	11.4	15.3	15.3
Public Administration	7.3	7.4	8.8	8.2	7.2	7.2	6.9	8.6	8.5	8.1
Sub-total: Non-commercial Services	..	22.9	24.6	23.9	21.8	25.0	23.8	20.0	23.8	23.4
Total Services	68.1	71.3	68.4	71.4	63.3	67.5	72.1	64.9	67.9	71.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

".." data not available.

Table A3
PERCENT INCREASE IN EMPLOYMENT as Measured By Three Major Sources: Census, Labour Force Survey and Establishment Surveys,
1961-71 and 1971-81

Industry	Employment					Experienced Labour Force Census - June 1	
	Labour Force Survey	Census - June 1		Establishment Survey			
	1971-81	1971-81	1961-71	1971-81	1961-71	1971-81	
Mines, Oil and Gas Wells	46.9	41.0	17.8	40.5	27.5	43.2	
Manufacturing	20.1	23.0	25.1	15.0	28.7	24.9	
Construction	33.1	31.0	36.2	22.7	29.4	33.9	
Sub-total	24.4	25.9	26.5	17.9	28.8	28.0	
Transportation, Communication and Other Utilities	29.0	32.5	18.0	24.0	17.4	32.2	
Trade	41.1	43.3	46.0	47.2	35.5	46.0	
Finance, Insurance and Real Estate	48.9	64.2	58.4	71.4	64.3	64.9	
Other Commercial Services	..	67.0	83.1	95.8	53.9	73.9	
Sub-total: Commercial Services	..	50.2	45.3	56.6	38.6	53.3	
Non-commercial Services	..	38.5	74.2	26.8	88.6	41.6	
Public Administration	40.7	29.3	43.0	32.4	39.8	34.4	
Sub-total: Non-commercial Services	..	35.2	64.0	30.5	67.7	39.1	
Total Services	45.2	44.8	52.4	46.9	47.6	48.3	
TOTAL	38.5	38.8	42.9	37.5	41.0	41.8	

".." data not available.

1970 STANDARD INDUSTRIAL CLASSIFICATION

LIST OF GROUPS AND CLASSES

Division 1 — Agriculture

Ind. No. Major Group 1 — Experimental and Institutional Farms

- 001 Experimental and University Farms
003 Institutional Farms

Major Group 2 — Farms (except Experimental and Institutional Farms)

- 011 Livestock and Livestock Combination Farms
013 Field Crop and Field Crop Combination Farms
015 Fruit and Vegetable Farms
017 Other Crop and Livestock Combination Farms
019 Miscellaneous Specialty Farms

Major Group 3 — Services Incidental to Agriculture

- 021 Services Incidental to Agriculture

Division 2 — Forestry

Major Group 1 — Logging

- 031 Logging

Major Group 2 — Forestry Services

- 039 Forestry Services

Division 3 — Fishing and Trapping

Major Group 1 — Fishing

- 041 Fishing

Major Group 2 — Fishery Services

- 045 Fishery Services

Major Group 3 — Hunting and Trapping

- 047 Hunting and Trapping

Division 4 — Mines (including Milling), Quarries and Oil Wells

Major Group 1 — Metal Mines

- 051 Placer Gold Mines
052 Gold Quartz Mines
057 Uranium Mines
058 Iron Mines
059 Miscellaneous Metal Mines

Major Group 2 — Mineral Fuels

- 061 Coal Mines
064 Crude Petroleum and Natural Gas Industry

Major Group 3 — Non-Metal Mines (except Coal Mines)

- 071 Asbestos Mines
072 Peat Extraction
073 Gypsum Mines
079 Miscellaneous Non-Metal Mines

Ind. No. Division 4 — Mines (including Milling), Quarries and Oil Wells — Concluded

Major Group 4 — Quarries and Sand Pits

- 083 Stone Quarries
087 Sand Pits or Quarries

Major Group 5 — Services Incidental to Mining

- 096 Contract Drilling for Petroleum
098 Other Contract Drilling
099 Miscellaneous Services Incidental to Mining

Division 5 — Manufacturing Industries

Major Group 1 — Food and Beverage Industries

- 101 Meat and Poultry Products Industries
102 Fish Products Industry
103 Fruit and Vegetable Processing Industries
104 Dairy Products Industry
105 Flour and Breakfast Cereal Products Industry
106 Feed Industry
107 Bakery Products Industries
108 Miscellaneous Food Industries
109 Beverage Industries

Major Group 2 — Tobacco Products Industries

- 151 Leaf Tobacco Processors
153 Tobacco Products Manufacturers

Major Group 3 — Rubber and Plastics Products Industries

- 162 Rubber Products Industries
165 Plastics Fabricating Industry, n.e.s.

Major Group 4 — Leather Industries

- 172 Leather Tanneries
174 Shoe Factories
175 Leather Glove Factories
179 Luggage, Handbag and Small Leather Goods Manufacturers

Major Group 5 — Textile Industries

- 181 Cotton Yarn and Cloth Mills
182 Wool Yarn and Cloth Mills
183 Man-made Fibre, Yarn and Cloth Mills
184 Cordage and Twine Industry
185 Felt and Fibre Processing Mills
186 Carpet, Mat and Rug Industry
187 Canvas Products, and Cotton and Jute Bags Industries
188 Automobile Fabric Accessories Industry
189 Miscellaneous Textile Industries

Major Group 6 — Knitting Mills

- 231 Hosiery Mills
239 Knitting Mills (except Hosiery Mills)

Division 5 — Manufacturing Industries — Continued

Major Group 7 — Clothing Industries

- 243 Men's Clothing Industries
- 244 Women's Clothing Industries
- 245 Children's Clothing Industry
- 246 Fur Goods Industry
- 248 Foundation Garment Industry
- 249 Miscellaneous Clothing Industries

Major Group 8 — Wood Industries

- 251 Sawmills, Planing Mills and Shingle Mills
- 252 Veneer and Plywood Mills
- 254 Sash, Door and Other Millwork Plants
- 256 Wooden Box Factories
- 258 Coffin and Casket Industry
- 259 Miscellaneous Wood Industries

Major Group 9 — Furniture and Fixture Industries

- 261 Household Furniture Manufacturers
- 264 Office Furniture Manufacturers
- 266 Miscellaneous Furniture and Fixtures
Manufacturers
- 268 Electric Lamp and Shade Manufacturers

Major Group 10 — Paper and Allied Industries

- 271 Pulp and Paper Mills
- 272 Asphalt Roofing Manufacturers
- 273 Paper Box and Bag Manufacturers
- 274 Miscellaneous Paper Converters

Major Group 11 — Printing, Publishing and Allied Industries

- 286 Commercial Printing
- 287 Platemaking, Typesetting and Trade
Bindery Industry
- 288 Publishing Only
- 289 Publishing and Printing

Major Group 12 — Primary Metal Industries

- 291 Iron and Steel Mills
- 292 Steel Pipe and Tube Mills
- 294 Iron Foundries
- 295 Smelting and Refining
- 296 Aluminum Rolling, Casting and Extruding
- 297 Copper and Copper Alloy Rolling, Casting
and Extruding
- 298 Metal Rolling, Casting and Extruding, n.e.s.

Major Group 13 — Metal Fabricating Industries (except Machinery and Transportation Equipment Industries)

- 301 Boiler and Plate Works
- 302 Fabricated Structural Metal Industry
- 303 Ornamental and Architectural Metal Industry
- 304 Metal Stamping, Pressing and Coating Industry
- 305 Wire and Wire Products Manufacturers
- 306 Hardware, Tool and Cutlery Manufacturers
- 307 Heating Equipment Manufacturers
- 308 Machine Shops
- 309 Miscellaneous Metal Fabricating Industries

Major Group 14 — Machinery Industries (except Electrical Machinery)

- 311 Agricultural Implement Industry
- 315 Miscellaneous Machinery and Equipment
Manufacturers
- 316 Commercial Refrigeration and Air
Conditioning Equipment Manufacturers
- 318 Office and Store Machinery Manufacturers

Division 5 — Manufacturing Industries — Concluded

Major Group 15 — Transportation Equipment Industries

- 321 Aircraft and Aircraft Parts Manufacturers
- 323 Motor Vehicle Manufacturers
- 324 Truck Body and Trailer Manufacturers
- 325 Motor Vehicle Parts and Accessories
Manufacturers
- 326 Railroad Rolling Stock Industry
- 327 Shipbuilding and Repair
- 328 Boatbuilding and Repair
- 329 Miscellaneous Vehicle Manufacturers

Major Group 16 — Electrical Products Industries

- 331 Manufacturers of Small Electrical
Appliances
- 332 Manufacturers of Major Appliances
(Electric and Non-Electric)
- 333 Manufacturers of Lighting Fixtures
- 334 Manufacturers of Household Radio and
Television Receivers
- 335 Communications Equipment Manufacturers
- 336 Manufacturers of Electrical Industrial
Equipment
- 338 Manufacturers of Electric Wire and Cable
- 339 Manufacturers of Miscellaneous Electrical
Products

Major Group 17 — Non-Metallic Mineral Products Industries

- 351 Clay Products Manufacturers
- 352 Cement Manufacturers
- 353 Stone Products Manufacturers
- 354 Concrete Products Manufacturers
- 355 Ready-Mix Concrete Manufacturers
- 356 Glass and Glass Products Manufacturers
- 357 Abrasives Manufacturers
- 358 Lime Manufacturers
- 359 Miscellaneous Non-Metallic Mineral Products
Industries

Major Group 18 — Petroleum and Coal Products Industries

- 365 Petroleum Refineries
- 369 Miscellaneous Petroleum and Coal Products
Industries

Major Group 19 — Chemical and Chemical Products Industries

- 372 Manufacturers of Mixed Fertilizers
- 373 Manufacturers of Plastics and Synthetic
Resins
- 374 Manufacturers of Pharmaceuticals and
Medicines
- 375 Paint and Varnish Manufacturers
- 376 Manufacturers of Soap and Cleaning
Compounds
- 377 Manufacturers of Toilet Preparations
- 378 Manufacturers of Industrial Chemicals
- 379 Miscellaneous Chemical Industries

Major Group 20 — Miscellaneous Manufacturing Industries

- 391 Scientific and Professional Equipment
Industries
- 392 Jewellery and Silverware Industry
- 393 Sporting Goods and Toy Industries
- 397 Signs and Displays Industry
- 399 Miscellaneous Manufacturing Industries, n.e.s.

Division 6 — Construction Industry

Major Group 1 — General Contractors

- 404 Building Construction
- 406 Highway, Bridge and Street Construction
- 409 Other Construction

Major Group 2 — Special-Trade Contractors

- 421 Special-Trade Contractors

Division 7 — Transportation, Communication and Other Utilities

Major Group 1 — Transportation

- 501 Air Transport
- 502 Services Incidental to Air Transport
- 503 Railway Transport
- 504 Water Transport
- 505 Services Incidental to Water Transport
- 506 Moving and Storage, Used Goods, Uncrated
- 507 Other Truck Transport
- 508 Bus Transport, Interurban and Rural
- 509 Urban Transit Systems
- 512 Taxicab Operations
- 515 Pipeline Transport
- 516 Highway and Bridge Maintenance
- 517 Miscellaneous Services Incidental to Transport
- 519 Other Transportation

Major Group 2 — Storage

- 524 Grain Elevators
- 527 Other Storage and Warehousing

Major Group 3 — Communication

- 543 Radio and Television Broadcasting
- 544 Telephone Systems
- 545 Telegraph and Cable Systems
- 548 Post Office

Major Group 4 — Electric Power, Gas and Water Utilities

- 572 Electric Power
- 574 Gas Distribution
- 576 Water Systems
- 579 Other Utilities

Division 8 — Trade

Major Group 1 — Wholesale Trade

- 602 Wholesalers of Farm Products
- 606 Wholesalers of Coal and Coke
- 608 Wholesalers of Petroleum Products
- 611 Wholesalers of Paper and Paper Products
- 612 Wholesalers of General Merchandise
- 614 Wholesalers of Food
- 615 Wholesalers of Tobacco Products
- 616 Wholesalers of Drugs and Toilet Preparations
- 617 Wholesalers of Apparel and Dry Goods
- 618 Wholesalers of Household Furniture and Furnishings
- 619 Wholesalers of Motor Vehicles and Accessories
- 621 Wholesalers of Electrical Machinery, Equipment and Supplies
- 622 Wholesalers of Farm Machinery and Equipment
- 623 Wholesalers of Machinery and Equipment, n.e.s.

Division 8 — Trade — Concluded

Major Group 1 — Wholesale Trade — Concluded

- 624 Wholesalers of Hardware, Plumbing and Heating Equipment
- 625 Wholesalers of Metal and Metal Products, n.e.s.
- 626 Wholesalers of Lumber and Building Materials
- 627 Wholesalers of Scrap and Waste Materials
- 629 Wholesalers, n.e.s.

Major Group 2 — Retail Trade

- 631 Food Stores
- 642 General Merchandise Stores
- 652 Tire, Battery and Accessories Stores
- 654 Gasoline Service Stations
- 656 Motor Vehicle Dealers
- 658 Motor Vehicle Repair Shops
- 663 Shoe Stores
- 665 Men's Clothing Stores
- 667 Women's Clothing Stores
- 669 Clothing and Dry Goods Stores, n.e.s.
- 673 Hardware Stores
- 676 Household Furniture and Appliance Stores
- 678 Radio, Television and Electrical Appliance Repair Shops
- 681 Drug Stores
- 691 Book and Stationery Stores
- 692 Florists' Shops
- 694 Jewellery Store
- 695 Watch and Jewellery Repair Shops
- 696 Liquor, Wine and Beer Stores
- 697 Tobacconists
- 699 Retail Stores, n.e.s.

Division 9 — Finance, Insurance and Real Estate

Major Group 1 — Finance Industries

- 701 Banks and Other Deposit Accepting Establishments
- 703 Other Credit Agencies
- 705 Security Brokers and Dealers (including Exchanges)
- 707 Investment and Holding Companies
- 715 Canadian Offices of Canadian-Incorporated Companies Classified as Non-Canadian

Major Group 2 — Insurance Carriers

- 721 Insurance Carriers

Major Group 3 — Insurance Agencies and Real Estate Industry

- 735 Insurance and Real Estate Agencies
- 737 Real Estate Operators

Division 10 — Community, Business and Personal Service Industries

Major Group 1 — Education and Related Services

- 801 Kindergartens and Nursery Schools
- 802 Elementary and Secondary Schools
- 803 Schools of Art and of the Performing Arts
- 804 Vocational Centers, Trade Schools and Business Colleges
- 805 Post-Secondary Non-University Educational Institutions
- 806 Universities and Colleges
- 807 Libraries, Museums and Other Repositories
- 809 Education and Related Services, n.e.s.

**Division 10 — Community, Business
and Personal Service Industries**
— Continued

Major Group 2 — Health and Welfare Services

- 821 Hospitals
- 822 Related Health Care Institutions
- 823 Offices of Physicians and Surgeons
- 824 Offices of Para-medical Personnel (Practitioners)
- 825 Offices of Dentists
- 826 Diagnostic and Therapeutic Services, n.e.s.
- 827 Miscellaneous Health Services
- 828 Welfare Organizations

Major Group 3 — Religious Organizations

- 831 Religious Organizations

**Major Group 4 — Amusement
and Recreation Services**

- 841 Motion Picture Theatres
- 842 Motion Picture Production and Distribution
- 843 Bowling Alleys and Billiard Parlours
- 844 Golf Clubs and Country Clubs
- 845 Theatrical and Other Staged Entertainment Services
- 849 Miscellaneous Amusement and Recreation Services

**Major Group 5 — Services
to Business Management**

- 851 Employment Agencies and Personnel Suppliers
- 853 Computer Services
- 855 Security and Investigation Services
- 861 Offices of Accountants
- 862 Advertising Services
- 863 Offices of Architects
- 864 Engineering and Scientific Services
- 866 Offices of Lawyers and Notaries
- 867 Offices of Management and Business Consultants
- 869 Miscellaneous Services to Business Management

Major Group 6 — Personal Services

- 871 Shoe Repair Shops
- 872 Barber and Beauty Shops
- 873 Private Households
- 874 Laundries, Cleaners and Pressers (except Self-Service)
- 876 Self-service Laundries and Dry Cleaners
- 877 Funeral Services
- 879 Miscellaneous Personal Services

**Division 10 — Community, Business
and Personal Service Industries**
— Concluded

**Major Group 7 — Accommodation and
Food Services**

- 881 Hotels and Motels
- 883 Lodging Houses and Residential Clubs
- 884 Camping Grounds and Trailer Parks
- 886 Restaurants, Caterers and Taverns

Major Group 8 — Miscellaneous Services

- 891 Labour Organizations and Trade Associations
- 893 Photographic Services, n.e.s.
- 894 Automobile and Truck Rental
- 895 Machinery and Equipment Rental
- 896 Blacksmithing and Welding Shops
- 897 Miscellaneous Repair Shops
- 898 Services to Buildings and Dwellings
- 899 Miscellaneous Services, n.e.s.

**Division 11 — Public Administration
and Defense**

Major Group 1 — Federal Administration

- 902 Defence Services
- 909 Other Federal Administration

Major Group 2 — Provincial Administration

- 931 Provincial Administration

Major Group 3 — Local Administration

- 951 Local Administration

Major Group 4 — Other Government Offices

- 991 Other Government Offices

**Division 12 — Industry Unspecified
or Undefined**

- 999 Canadian-Incorporated Companies
Classified as Non-Canadian
- 000 Unspecified or Undefined

Appendix B

STATISTICAL TABLES

Sources

Figures for the years 1951, 1961, 1971 and 1981 on the *experienced labour force* are Census data. *Employment* statistics from the 1971 and 1981 Censuses are used, along with *employment* data from the Labour Force Survey for the years 1976, 1981 and 1984.

Detailed Sources

Statistics Canada Catalogue:

72-513 (1974)

Estimates of Employees by Province and Industry, 1961-1972.

94-747 (1975)

1971 Census of Canada, Industries: Employed Labour Force by Industry, Age and Sex for Canada and Provinces.

94-793 (SE-2) (1978)

1971 Census of Canada, Industry Trends, 1951-1971.

72-008 (1983)

Estimates of Employees by Province and Industry, March 1983.

71-201 (1983)

Historical Labour Force Statistics.

92-921 (1984)

1981 Census of Canada, Population: Labour Force - Industry by Demographic and Educational Characteristics.

And unpublished data from the Labour Force Survey and the 1981 Census of Canada.

Table B1

Experienced Labour Force by INDUSTRY, 1951 to 1981

Industry	Experienced Labour Force ¹			
	1951	1961	1971	1981
	'000			
Agriculture	823.8	637.9	501.0	493.0
Forestry	130.4	110.3	81.8	105.2
Fishing and Trapping	53.2	36.6	26.8	37.7
Mines, Oil and Gas Wells	103.6	119.3	152.1	217.8
Food and Beverage	175.3	223.6	261.4	317.3
Tobacco Products	8.5	9.0	9.5	8.6
Rubber and Plastic Products	23.3	25.7	48.7	71.3
Leather Industries	32.0	33.6	30.8	33.3
Textile Industries	79.0	61.3	74.1	84.1
Knitting Mills	24.1	20.1	19.9	22.9
Clothing Industries	84.9	88.8	104.8	131.2
Wood Industries	116.3	101.2	110.8	156.9
Furniture and Fixture	30.2	36.7	48.3	71.5
Paper and Allied	90.9	102.8	133.2	152.0
Printing, Publishing and Allied	63.1	86.4	112.6	141.8
Primary Metal	129.1	92.0	124.8	142.7
Metal Fabricating (except Machinery and Transportation Equipment)	..	105.8	147.1	197.2
Machinery (except Electrical Machinery)	..	51.2	83.8	125.2
Transportation Equipment	129.1	120.7	175.6	215.2
Electrical Products	..	86.4	123.3	137.6
Non-metallic Mineral Products	36.1	47.9	59.6	71.8
Petroleum, Coal, Chemical and Chemical Products	64.3	87.8	104.3	130.3
Misc. Manufacturing Industries	39.8	48.9	67.3	87.3
Construction	325.4	448.3	580.3	777.3
Transportation and Storage	370.3	410.4	460.9	576.7
Communication	96.9	132.9	175.5	255.5
Electric Power, Gas and Water Utilities	62.5	78.9	94.3	134.1
Wholesale Trade	235.6	309.0	380.4	577.2
Retail Trade	531.0	716.4	1009.5	1451.9
Financial Institutions	70.3	114.3	199.5	326.6
Insurance and Real Estate	76.6	121.4	187.7	311.8
Education and Related	154.8	275.9	605.4	789.7
Health and Welfare	178.3	319.3	564.2	881.5
Religious Organizations	39.9	55.7	58.2	67.7
Amusement and Recreation	29.6	42.3	85.2	142.5
Services to Business Management and Misc. Services	87.4	173.5	367.8	756.5
Personal Services	165.1	201.1	192.3	191.5
Accommodation and Food	161.7	250.8	382.6	697.2
Federal Administration	184.5	290.4	352.3	389.7
Provincial Administration	38.4	71.8	172.2	269.1
Local Administration	54.6	119.7	154.4	245.4
Other Government Offices	5.6	5.5	2.4	1.8
TOTAL	5286.4 ²	6471.8	8626.9	12005.3

Table B1 (concluded)
Experienced Labour Force by INDUSTRY, 1951 to 1981

Industry	Percent Distribution			
	1951	1961	1971	1981
Agriculture	15.6	9.9	5.8	4.1
Forestry	2.5	1.7	0.9	0.9
Fishing and Trapping	1.0	0.6	0.3	0.3
Mines, Oil and Gas Wells	2.0	1.8	1.8	1.8
Food and Beverage	3.3	3.5	3.0	2.6
Tobacco Products	0.2	0.1	0.1	0.1
Rubber and Plastic Products	0.4	0.4	0.6	0.6
Leather Industries	0.6	0.5	0.4	0.3
Textile Industries	1.5	0.9	0.9	0.7
Knitting Mills	0.5	0.3	0.2	0.2
Clothing Industries	1.6	1.4	1.2	1.1
Wood Industries	2.2	1.6	1.3	1.3
Furniture and Fixture	0.6	0.6	0.6	0.6
Paper and Allied	1.7	1.6	1.5	1.3
Printing, Publishing and Allied	1.2	1.3	1.3	1.2
Primary Metal	2.4	1.4	1.4	1.2
Metal Fabricating (except Machinery and Transportation Equipment)	..	1.6	1.7	1.6
Machinery (except Electrical Machinery)	..	0.8	1.0	1.0
Transportation Equipment	2.4	1.9	2.0	1.8
Electrical Products	..	1.3	1.4	1.1
Non-metallic Mineral Products	0.7	0.7	0.7	0.6
Petroleum, Coal, Chemical and Chemical Products	1.2	1.4	1.2	1.1
Misc. Manufacturing Industries	0.8	0.8	0.8	0.7
Construction	6.2	6.9	6.7	6.5
Transportation and Storage	7.0	6.3	5.3	4.8
Communication	1.8	2.1	2.0	2.1
Electric Power, Gas and Water Utilities	1.2	1.2	1.1	1.1
Wholesale Trade	4.5	4.8	4.4	4.8
Retail Trade	10.0	11.1	11.7	12.1
Financial Institutions	1.3	1.8	2.3	2.7
Insurance and Real Estate	1.4	1.9	2.2	2.6
Education and Related	2.9	4.3	7.0	6.6
Health and Welfare	3.4	4.9	6.5	7.3
Religious Organizations	0.8	0.9	0.7	0.6
Amusement and Recreation	0.6	0.7	1.0	1.2
Services to Business Management and Misc. Services	1.7	2.7	4.3	6.3
Personal Services	3.1	3.1	2.2	1.6
Accommodation and Food	3.1	3.9	4.4	5.8
Federal Administration	3.5	4.5	4.1	3.3
Provincial Administration	0.7	1.1	2.0	2.2
Local Administration	1.0	1.9	1.8	2.0
Other Government Offices	0.1	0.1	.0	.0
TOTAL	100.0 ²	100.0	100.0	100.0

² .." data not available

¹ The unclassified industries have been redistributed for all years using the assignment distribution developed for the 1981 Census. All years based on 1970 SIC (Standard Industrial Classification Manual).

² The sum of the figures in the 1951 column does not add to the total because of missing industries.

Table B2

INDUSTRY Changes in Share and Growth Rates, Experienced Labour Force, 1951-61 to 1971-81

Industry	Change in Share of Experienced Labour Force		
	1951 1961	1961 1971	1971 1981
1. Agriculture	-5.7	-4.0	-1.7
2. Forestry	-0.8	-0.8	-0.1
3. Fishing and Trapping	-0.4	-0.3	.0
4. Mines, Oil and Gas Wells	-0.1	-0.1	0.1
5. Food and Beverage	0.1	-0.4	-0.4
6. Tobacco Products	.0	.0	.0
7. Rubber and Plastic Products	.0	0.2	.0
8. Leather Industries	-0.1	-0.2	-0.1
9. Textile Industries	-0.5	-0.1	-0.2
10. Knitting Mills	-0.1	-0.1	.0
11. Clothing Industries	-0.2	-0.2	-0.1
12. Wood Industries	-0.6	-0.3	.0
13. Furniture and Fixture	.0	.0	.0
14. Paper and Allied	-0.1	.0	-0.3
15. Printing, Publishing and Allied	0.1	.0	-0.1
16. Primary Metal	-1.0	.0	-0.3
17. Metal Fabricating (except Machinery and Transportation Equipment)	..	0.1	-0.1
18. Machinery (except Electrical Machinery)	..	0.2	0.1
19. Transportation Equipment	-0.6	0.2	-0.2
20. Electrical Products	..	0.1	-0.3
21. Non-metallic Mineral Products	0.1	.0	-0.1
22. Petroleum, Coal, Chemical and Chemical Products	0.1	-0.1	-0.1
23. Misc. Manufacturing Industries	.0	.0	-0.1
24. Construction	0.8	-0.2	-0.3
25. Transportation and Storage	-0.7	-1.0	-0.5
26. Communication	0.2	.0	0.1
27. Electric Power, Gas and Water Utilities	.0	-0.1	.0
28. Wholesale Trade	0.3	-0.4	0.4
29. Retail Trade	1.0	0.6	0.4
30. Financial Institutions	0.4	0.5	0.4
31. Insurance and Real Estate	0.4	0.3	0.4
32. Education and Related	1.3	2.8	-0.4
33. Health and Welfare	1.6	1.6	0.8
34. Religious Organizations	0.1	-0.2	-0.1
35. Amusement and Recreation	0.1	0.3	0.2
36. Services to Business Management and Misc. Services	1.0	1.6	2.0
37. Personal Services	.0	-0.9	-0.6
38. Accommodation and Food	0.8	0.6	1.4
39. Federal Administration	1.0	-0.4	-0.8
40. Provincial Administration	0.4	0.9	0.2
41. Local Administration	0.8	-0.1	0.3
42. Other Government Offices	.0	-0.1	.0
TOTAL	-	-	-

".." data not available.

Table B2 (concluded)

INDUSTRY Changes in Share and Growth Rates, Experienced Labour Force, 1951-61 to 1971-81

Industry	Percent Change in Experienced Labour Force		
	1951 1961	1961 1971	1971 1981
1. Agriculture	-22.6	-21.5	-1.6
2. Forestry	-15.4	-25.8	28.6
3. Fishing and Trapping	-31.3	-26.8	40.7
4. Mines, Oil and Gas Wells	15.1	27.6	43.2
5. Food and Beverage	27.5	16.9	21.4
6. Tobacco Products	5.2	6.4	-9.6
7. Rubber and Plastic Products	10.3	89.4	46.4
8. Leather Industries	5.2	-8.6	8.2
9. Textile Industries	-22.5	20.9	13.5
10. Knitting Mills	-16.4	-1.0	14.8
11. Clothing Industries	4.6	18.0	25.1
12. Wood Industries	-12.9	9.4	41.6
13. Furniture and Fixture	21.6	31.9	47.9
14. Paper and Allied	13.1	29.6	14.1
15. Printing, Publishing and Allied	37.0	30.4	25.9
16. Primary Metal	-28.7	35.7	14.3
17. Metal Fabricating (except Machinery and Transportation Equipment)	..	39.0	34.0
18. Machinery (except Electrical Machinery)	..	63.5	49.4
19. Transportation Equipment	-6.6	45.5	22.5
20. Electrical Products	..	42.7	11.6
21. Non-metallic Mineral Products	32.7	24.4	20.4
22. Petroleum, Coal, Chemical and Chemical Products	36.6	18.7	24.9
23. Misc. Manufacturing Industries	22.7	37.7	29.6
24. Construction	37.8	29.4	33.9
25. Transportation and Storage	10.8	12.3	25.1
26. Communication	37.2	32.0	45.6
27. Electric Power, Gas and Water Utilities	26.3	19.4	42.3
28. Wholesale Trade	31.2	23.1	51.7
29. Retail Trade	34.9	40.9	43.8
30. Financial Institutions	62.6	74.6	63.7
31. Insurance and Real Estate	58.5	54.6	66.1
32. Education and Related	78.3	119.4	30.4
33. Health and Welfare	79.1	76.7	56.2
34. Religious Organizations	39.7	4.5	16.4
35. Amusement and Recreation	42.9	101.3	67.2
36. Services to Business Management and Misc. Services	98.5	112.0	105.7
37. Personal Services	21.8	-4.4	-0.4
38. Accommodation and Food	55.2	52.5	82.2
39. Federal Administration	57.4	21.3	13.5
40. Provincial Administration	87.1	139.7	56.3
41. Local Administration	119.3	28.9	58.9
42. Other Government Offices	-1.1	-56.4	-25.9
TOTAL	22.4	33.3	39.2

" " data not available.

Table B3

Percent of Total Expansion in the Experienced Labour Force Contributed by
Each INDUSTRY, 1951-61 to 1971-81

Industry	1951 1961	1961 1971	1971 1981
Agriculture	-15.7	-6.4	-0.2
Forestry	-1.7	-1.3	0.7
Fishing and Trapping	-1.4	-0.5	0.3
Mines, Oil and Gas Wells	1.3	1.5	1.9
Food and Beverage	4.1	1.8	1.7
Tobacco Products	.0	.0	.0
Rubber and Plastic Products	0.2	1.1	0.7
Leather Industries	0.1	-0.1	0.1
Textile Industries	-1.5	0.6	0.3
Knitting Mills	-0.3	.0	0.1
Clothing Industries	0.3	0.7	0.8
Wood Industries	-1.3	0.4	1.4
Furniture and Fixture	0.5	0.5	0.7
Paper and Allied	1.0	1.4	0.6
Printing, Publishing and Allied	2.0	1.2	0.9
Primary Metal	-3.1	1.5	0.5
Metal Fabricating (except Machinery and Transportation Equipment)	..	1.9	1.5
Machinery (except Electrical Machinery)	..	1.5	1.2
Transportation Equipment	-0.7	2.5	1.2
Electrical Products	..	1.7	0.4
Non-metallic Mineral Products	1.0	0.5	0.4
Petroleum, Coal, Chemical and Chemical Products	2.0	0.8	0.8
Misc. Manufacturing Industries	0.8	0.9	0.6
Construction	10.4	6.1	5.8
Transportation and Storage	3.4	2.3	3.4
Communication	3.0	2.0	2.4
Electric Power, Gas and Water Utilities	1.4	0.7	1.2
Wholesale Trade	6.2	3.3	5.8
Retail Trade	15.6	13.6	13.1
Financial Institutions	3.7	4.0	3.8
Insurance and Real Estate	3.8	3.1	3.7
Education and Related	10.2	15.3	5.5
Health and Welfare	11.9	11.4	9.4
Religious Organizations	1.3	0.1	0.3
Amusement and Recreation	1.1	2.0	1.7
Services to Business Management and Misc. Services	7.3	9.0	11.5
Personal Services	3.0	-0.4	.0
Accommodation and Food	7.5	6.1	9.3
Federal Administration	8.9	2.9	1.4
Provincial Administration	2.8	4.7	2.9
Local Administration	5.5	1.6	2.7
Other Government Offices	.0	-0.1	.0
TOTAL Expansion ('000)	1185.4	2155.1	3378.4

".." data not available.

Table B4

Experienced Labour Force by SECTOR, 1951 to 1981

Sector ²	Experienced Labour Force ¹				Percent Distribution			
	1951	1961	1971	1981	1951	1961	1971	1981
	'000							
Agriculture	823.8	637.9	501.0	493.0	15.6	9.9	5.8	4.1
Manufacturing	1307.1	1429.9	1840.0	2298.0	24.7	22.1	21.3	19.1
Construction	325.4	448.3	580.3	777.3	6.2	6.9	6.7	6.5
Other Goods-producing	349.8	345.1	355.0	494.7	6.6	5.3	4.1	4.1
Total Goods-producing	2806.0	2861.2	3276.3	4063.1	53.1	44.2	38.0	33.8
Distributive Services	1233.7	1568.7	2026.4	2861.3	23.3	24.2	23.5	23.8
Producer Services	202.8	346.7	621.5	1134.7	3.8	5.4	7.2	9.5
Consumer Services	387.8	556.8	793.6	1291.3	7.3	8.6	9.2	10.8
Total Commercial Services	1824.4	2472.2	3441.6	5287.3	34.5	38.2	39.9	44.0
Non-commercial Services	656.0	1138.4	1909.1	2654.9	12.4	17.6	22.1	22.1
Total services	2480.4	3610.6	5350.6	7942.2	46.9	55.8	62.0	66.2
TOTAL	5286.4	6471.8	8626.9	12005.3	100.0	100.0	100.0	100.0

¹ The unclassified industries have been redistributed for all years using the assignment distribution developed for the 1981 Census. All years based on 1970 SIC (Standard Industrial Classification Manual).

² A list of industries included in each sector is on page 5.

Table B5

Changes in Share and Growth Rates of the Experienced Labour Force, by
SECTOR, 1951-61 to 1971-81

Sector	Change in Share of Experienced Labour Force			Percent Change in Experienced Labour Force		
	1951 1961	1961 1971	1971 1981	1951 1961	1961 1971	1971 1981
Agriculture	-5.7	-4.0	-1.7	-22.6	-21.5	-1.6
Manufacturing	-2.6	-0.8	-2.2	9.4	28.7	24.9
Construction	0.8	-0.2	-0.3	37.8	29.4	33.9
Other Goods-producing	-1.3	-1.2	.0	-1.3	2.9	39.4
Total Goods-producing	-8.9	-6.2	-4.1	2.0	14.5	24.0
Distributive Services	0.9	-0.7	0.3	27.2	29.2	41.2
Producer Services	1.6	1.8	2.3	71.0	79.3	82.6
Consumer Services	1.3	0.6	1.6	43.6	42.5	62.7
Total Commercial Services	3.7	1.7	4.1	35.5	39.2	53.6
Non-Commercial Services	5.2	4.5	.0	73.5	67.7	39.1
Total Services	8.9	6.2	4.1	45.6	48.2	48.4
TOTAL	-	-	-	22.4	33.3	39.2

Table 86

Percent of Total Expansion in the Experienced Labour Force Contributed by
Each SECTOR, 1951-61 to 1971-81

Sector	1951 1961	1961 1971	1971 1981
Agriculture	-15.7	-6.4	-0.2
Manufacturing	10.4	19.0	13.6
Construction	10.4	6.1	5.8
Other Goods-producing	-0.4	0.5	4.1
Total Goods-producing	4.7	19.3	23.3
Distributive Services	28.3	21.2	24.7
Producer Services	12.1	12.8	15.2
Consumer Services	14.3	11.0	14.7
Total Commercial Services	54.6	45.0	54.6
Non-commercial Services	40.7	35.8	22.1
Total Services	95.3	80.7	76.7
TOTAL Expansion ('000)	1185.4	2155.1	3378.4

Table B7
Employment by INDUSTRY, 1971 to 1984

Industry	Employment				
	Census ¹		Labour Force Survey ²		
	1971	1981	1976	1981	1984
	'000		'000		
Agriculture	490	467	472	485	476
Forestry	69	82	70	78	76
Fishing and Trapping	25	32	19	35	34
Mines, Oil and Gas Wells	142	200	145	210	182
Food and Beverage	242	281	249	268	245
Tobacco Products	9	8	10	7	5
Rubber and Plastic Products	45	65	56	67	77
Leather Industries	28	30	32	33	28
Textile Industries	69	76	71	68	60
Knitting Mills	18	20	18	18	16 ^a
Clothing Industries	97	116	111	124	118 ^a
Wood Industries	102	140	117	139	118
Furniture and Fixture	45	65	60	68	61
Paper and Allied	124	143	143	145	128
Printing, Publishing and Allied	106	131	110	129	148
Primary Metal	119	136	128	151	122
Metal Fabricating (except Machinery and Transportation Equipment)	137	182	147	178	138
Machinery (except Electrical Machinery)	79	117	100	125	78
Transportation Equipment	163	199	188	199	210
Electrical Products	115	129	130	136	166
Non-metallic Mineral Products	56	67	65	62	53
Petroleum, Coal, Chemical and Chemical Products	99	124	116	124	118
Misc. Manufacturing Industries	62	80	69	80	80
General Contractors	252	277	289	267	231
Special-trade Contractors	270	407	346	384	341
Transportation and Storage	427	537	494	542	482
Communication	168	243	220	242	253
Electric Power, Gas and Water Utilities	90	128	111	128	123
Wholesale Trade	358	537	441	495	488
Retail Trade	945	1331	1203	1389	1441
Finance Industries	191	312	250	296	314
Insurance Carriers	72	100	94	117	119
Insurance Agencies and Real Estate	107	196	153	181	198
Education and Related	587	749	661	710	732
Health and Welfare	544	832	693	842	936
Religious Organizations	56	65	55	65	88
Amusement and Recreation	76	118	97	134	125
Services to Business Management	218	460	297	446	453
Personal Services	180	173	197	270	302
Accommodation and Food	346	593	409	591	608
Miscellaneous Services	125	233	165	209	240
Federal Administration	339	377	273	284	283
Provincial Administration	168	251	203	251	257
Local Administration and Other Government Offices	155	227	199	232	249
TOTAL	8117	11039	9477	11006	11000

Table B7 (concluded)
Employment by INDUSTRY, 1971 to 1984

Industry	Percent Distribution				
	Census		Labour Force Survey		
	1971	1981	1976	1981	1984
Agriculture	6.0	4.2	5.0	4.4	4.3
Forestry	0.9	0.7	0.7	0.7	0.7
Fishing and Trapping	0.3	0.3	0.2	0.3	0.3
Mines, Oil and Gas Wells	1.8	1.8	1.5	1.9	1.7
Food and Beverage	3.0	2.5	2.6	2.4	2.2
Tobacco Products	0.1	0.1	0.1	0.1	.0
Rubber and Plastic Products	0.6	0.6	0.6	0.6	0.7
Leather Industries	0.3	0.3	0.3	0.3	0.3
Textile Industries	0.8	0.7	0.7	0.6	0.5
Knitting Mills	0.2	0.2	0.2	0.2	0.1
Clothing Industries	1.2	1.0	1.2	1.1	1.1
Wood Industries	1.3	1.3	1.2	1.3	1.1
Furniture and Fixture	0.6	0.6	0.6	0.6	0.6
Paper and Allied	1.5	1.3	1.5	1.3	1.2
Printing, Publishing and Allied	1.3	1.2	1.2	1.2	1.3
Primary Metal	1.5	1.2	1.4	1.4	1.1
Metal Fabricating (except Machinery and Transportation Equipment)	1.7	1.7	1.6	1.6	1.3
Machinery (except Electrical Machinery)	1.0	1.1	1.1	1.1	0.7
Transportation Equipment	2.0	1.8	2.0	1.8	1.9
Electrical Products	1.4	1.2	1.4	1.2	1.5
Non-metallic Mineral Products	0.7	0.6	0.7	0.6	0.5
Petroleum, Coal, Chemical and Chemical Products	1.2	1.1	1.2	1.1	1.1
Misc. Manufacturing Industries	0.8	0.7	0.7	0.7	0.7
General Contractors	3.1	2.5	3.0	2.4	2.1
Special-trade Contractors	3.3	3.7	3.7	3.5	3.1
Transportation and Storage	5.3	4.9	5.2	4.9	4.4
Communication	2.1	2.2	2.3	2.2	2.3
Electric Power, Gas and Water Utilities	1.1	1.2	1.2	1.2	1.1
Wholesale Trade	4.4	4.9	4.7	4.5	4.4
Retail Trade	11.6	12.1	12.7	12.6	13.1
Finance Industries	2.4	2.8	2.6	2.7	2.9
Insurance Carriers	0.9	0.9	1.0	1.1	1.1
Insurance Agencies and Real Estate	1.3	1.8	1.6	1.6	1.8
Education and Related	7.2	6.8	7.0	6.5	6.7
Health and Welfare	6.7	7.5	7.3	7.7	8.5
Religious Organizations	0.7	0.6	0.6	0.6	0.8
Amusement and Recreation	0.9	1.1	1.0	1.2	1.1
Services to Business Management	2.7	4.2	3.1	4.1	4.1
Personal Services	2.2	1.6	2.1	2.5	2.7
Accommodation and Food	4.3	5.4	4.3	5.4	5.5
Miscellaneous Services	1.5	2.1	1.7	1.9	2.2
Federal Administration	4.2	3.4	2.9	2.6	2.6
Provincial Administration	2.1	2.3	2.1	2.3	2.3
Local Administration and Other Government Offices	1.9	2.1	2.1	2.1	2.3
TOTAL	100.0	100.0	100.0	100.0	100.0

1. As of June of the year. The unclassified industries have been redistributed for all census years using the assignment distribution developed for the 1981 Census. All years based on 1970 SIC (Standard Classification Manual).

2. Annual Averages

3. The clothing and knitting mills industries were combined in 1984 with a total employment of 134,000. The split between these two industries for 1984 was estimated.

Table B8

INDUSTRY Changes in Share and Growth Rates in Employment, 1971 to 1984

Industry	Change in Share of Employment			Percent Change in Employment		
	Census	L.F. Survey		Census	L.F. Survey	
	1971 1981	1975 1981	1981 1984	1971 1981	1975 1981	1981 1984
Agriculture	-1.8	-0.6	-0.1	-4.6	2.8	-1.9
Forestry	-0.1	.0	.0	18.3	11.4	-2.6
Fishing and Trapping	.0	0.1	.0	29.2	84.2	-2.9
Mines, Oil and Gas Wells	0.1	0.4	-0.2	41.1	44.8	-13.3
Food and Beverage	-0.4	-0.2	-0.2	16.0	7.6	-8.6
Tobacco Products	.0	.0	-0.1	-9.5	-30.0	-28.6
Rubber and Plastic Products	.0	.0	0.1	44.3	19.6	14.9
Leather Industries	-0.1	.0	.0	7.2	3.1	-15.2
Textile Industries	-0.2	-0.1	-0.1	10.4	-4.2	-11.8
Knitting Mills	.0	.0	-0.1	12.1	0.0	-11.1
Clothing Industries	-0.1	.0	.0	19.9	11.7	-4.8
Wood Industries	.0	.0	-0.2	38.1	18.8	-15.1
Furniture and Fixture	.0	.0	.0	45.2	13.3	-10.3
Paper and Allied	-0.2	-0.2	-0.1	15.0	1.4	-11.7
Printing, Publishing and Allied	-0.1	.0	0.1	23.5	17.3	-14.7
Primary Metal	-0.2	.0	-0.3	14.0	18.0	-19.2
Metal Fabricating (except Machinery and Transportation Equipment)	.0	0.1	-0.3	33.2	21.1	-22.5
Machinery (except Electrical Machinery)	0.1	0.1	-0.4	48.4	25.0	-37.6
Transportation Equipment	-0.2	-0.2	0.1	22.4	5.9	5.5
Electrical Products	-0.2	-0.1	0.3	12.6	4.6	22.1
Non-metallic Mineral Products	-0.1	-0.1	-0.1	18.8	-4.6	-14.5
Petroleum, Coal, Chemical and Chemical Products	-0.1	-0.1	.0	24.7	6.9	-4.8
Misc. Manufacturing Industries	.0	.0	.0	28.5	15.9	.0
General Contractors	-0.6	-0.6	-0.3	9.9	-7.6	-13.5
Special-trade Contractors	0.4	-0.2	-0.4	50.7	11.0	-11.2
Transportation and Storage	-0.4	-0.3	-0.5	25.5	9.7	-11.1
Communication	0.1	-0.1	0.1	45.2	10.0	4.5
Electric Power, Gas and Water Utilities	.0	.0	-0.1	41.8	15.3	-3.9
Wholesale Trade	0.5	-0.2	-0.1	50.0	12.2	-1.4
Retail Trade	0.4	-0.1	0.5	40.8	15.5	3.7
Finance Industries	0.5	0.1	0.2	62.5	18.4	6.1
Insurance Carriers	.0	0.1	.0	39.0	24.5	1.7
Insurance Agencies and Real Estate	0.4	.0	0.2	82.2	18.3	9.4
Education and Related	-0.5	-0.5	0.2	27.5	7.4	3.1
Health and Welfare	0.8	0.3	0.8	52.8	21.5	11.2
Religious Organizations	-0.1	.0	0.2	14.4	18.2	35.4
Amusement and Recreation	0.1	0.2	-0.1	56.4	38.1	-6.7
Services to Business Management	1.5	0.9	.0	110.7	50.2	1.6
Personal Services	-0.6	0.4	0.2	-3.9	37.1	11.9
Accommodation and Food	1.1	1.1	0.1	71.7	44.5	2.9
Miscellaneous Services	0.6	0.2	0.3	86.0	26.7	14.8
Federal Administration	-0.8	-0.3	.0	11.3	4.0	-0.4
Provincial Administration	0.2	0.1	.0	49.7	23.6	2.4
Local Administration and Other Government Offices	0.1	.0	0.2	46.6	16.6	7.3
TOTAL	-	-	-	36.0	16.1	0.0

Table B9

Percent of Total Expansion in Net Employment Contributed by Each INDUSTRY, 1971-81
and 1976-81 and Change in Employment, 1981-84

Industry	Percent of Total Expansion in Net Employment		Change in Employment
	Census 1971-1981	L.F. Survey 1976-1981	L.F. Survey 1981-1984
			'000
Agriculture	-0.8	0.9	-9
Forestry	0.4	0.5	-2
Fishing and Trapping	0.3	1.0	-1
Mines, Oil and Gas Wells	2.0	4.3	-28
Food and Beverage	1.3	1.2	-23
Tobacco Products	.0	-0.2	-2
Rubber and Plastic Products	0.7	0.7	10
Leather Industries	0.1	0.1	-5
Textile Industries	0.2	-0.2	-8
Knitting Mills	0.1	0.0	-2
Clothing Industries	0.7	0.9	-6
Wood Industries	1.3	1.4	-21
Furniture and Fixture	0.7	0.5	-7
Paper and Allied	0.6	0.1	-17
Printing, Publishing and Allied	0.9	1.2	19
Primary Metal	0.6	1.5	-29
Metal Fabricating (except Machinery and Transportation Equipment)	1.6	2.0	-40
Machinery (except Electrical Machinery)	1.3	1.6	-47
Transportation Equipment	1.2	0.7	11
Electrical Products	0.5	0.4	30
Non-metallic Mineral Products	0.4	-0.2	-9
Petroleum, Coal, Chemical and Chemical Products	0.8	0.5	-6
Misc. Manufacturing Industries	0.6	0.7	0
General Contractors	0.9	-1.4	-36
Special-trade Contractors	4.7	2.5	-43
Transportation and Storage	3.7	3.1	-60
Communication	2.6	1.4	11
Electric Power, Gas and Water Utilities	1.3	1.1	-5
Wholesale Trade	6.1	3.5	-7
Retail Trade	13.2	12.2	52
Finance Industries	4.1	3.0	18
Insurance Carriers	1.0	1.5	2
Insurance Agencies and Real Estate	3.0	1.8	17
Education and Related	5.5	3.2	22
Health and Welfare	9.8	9.8	94
Religious Organizations	0.3	0.7	23
Amusement and Recreation	1.5	2.4	-9
Services to Business Management	8.3	9.8	7
Personal Services	-0.2	4.8	32
Accommodation and Food	8.5	11.9	17
Miscellaneous Services	3.7	2.9	31
Federal Administration	1.3	0.7	-1
Provincial Administration	2.9	3.1	6
Local Administration and Other Government Offices	2.5	2.2	17
TOTAL ('000)	2922	1529	-6

Table 810
Employment by SECTOR, 1971 to 1984

Sector ¹	Employment						Percent Distribution			
	Census ²		Labour Force Survey ³				Census		Labour Force Survey	
	1971	1981	1976	1981	1984		1971	1981	1976	1984
	'000		'000							
Agriculture	490	467	472	485	476					
Manufacturing	1715	2110	1920	2121	1969					
Construction	522	585	635	651	572					
Other Goods										
producing	327	443	345	451	415					
Total Goods-producing	3054	3705	3372	3708	3432					
Distributive Services	1899	2649	2358	2668	2564					
Producer Services	589	1058	794	1040	1084					
Consumer Services	726	1117	868	1204	1275					
Total Commercial Services	3214	4834	4020	4912	5023					
Non-commercial Services	1850	2501	2084	2384	2545					
Total Services	5064	7335	6104	7296	7568					
TOTAL	8117	11039	9477	11005	11000					

¹ A list of industries included in each sector is on page 5.

² As of June of the year. The unclassified industries have been redistributed for all Census years using the assignment distribution developed for the 1981 Census. All years based on 1970 SIC (Standard Industrial Classification Manual).

³ Annual averages.

Table B11

Changes in Share and Growth Rates of Employment, by Sector, 1971 to 1984

Sector	Change in Share of Employment			Percent Change in Employment		
	Census	L.F. Survey		Census	L.F. Survey	
	1971 1981	1976 1981	1981 1984	1971 1981	1976 1981	1981 1984
Agriculture	-1.8	-0.6	-0.1	-4.6	2.8	-1.9
Manufacturing	-2.0	-1.0	-1.4	23.0	10.5	-7.2
Construction	-0.2	-0.8	-0.7	31.0	2.5	-12.1
Other Goods-producing	.0	0.5	-0.3	35.5	30.7	-8.0
Total Goods-producing	-4.1	-1.9	-2.5	21.3	10.0	-7.4
Distributive Services	0.6	-0.7	.0	39.5	13.1	-0.1
Producer Services	2.4	1.1	0.5	81.4	40.0	4.2
Consumer Services	1.2	1.7	0.7	53.9	38.7	5.9
Total Commercial Services	4.2	2.2	1.1	50.4	22.2	2.3
Non-commercial Services	-0.1	-0.3	1.4	35.2	14.4	6.8
Total Services	4.1	1.9	2.5	44.9	19.5	3.7
TOTAL	-	-	-	36.0	16.1	-0.1

Table B12

Percent of Total Expansion in Net Employment Contributed by Each SECTOR,
1971-81 and 1976-81 and Change in Employment, 1981-84

Sector	Percent of Total Expansion in Net Employment		Change in Employment
	Census 1971-1981	L.F. Survey 1976-1981	L.F. Survey 1981-1984
			'000
Agriculture	-0.8	0.9	-9
Manufacturing	13.5	13.2	-152
Construction	5.5	1.0	-79
Other Goods-producing	4.0	6.9	-36
Total Goods-producing	22.3	22.0	-276
Distributive Services	25.7	20.3	-4
Producer Services	16.4	16.1	44
Consumer Services	13.4	22.0	71
Total Commercial Services	55.4	58.4	111
Non-commercial Services	22.3	19.6	161
Total Services	77.7	78.0	272
TOTAL ('000)	2922	1529	-6

BIBLIOGRAPHY

- Alvarez, D., B. Casper, *Productivity Trends in Manufacturing in the U.S. and 11 Other Countries*, Monthly Labour Review, January, 1984.
- Binswanger, H.P., *The Measurement of Technical Change Bias with Many Factors of Production*, American Economic Review, December, 1974, pg. 964-976.
- Birch, D.L., *Who Creates Jobs*, The Public Interest, Fall, 1981.
- Bluestone, B., Harrison, B., *The Deindustrialization of America*, Basic Books Inc., New York, 1982.
- Cross, P., *The Business Cycle in Canada, 1950-81*, Current Economic Analysis, Statistics Canada, Catalogue No. 13-004, March 1982.
- Daly M. and P.S. Rao, *Some Myths and Realities Concerning Canada's Recent Productivity Slowdown and Their Policy Implications*, Canadian Public Policy, XI No. 2, June 1985.
- Deardoff, Stern, *Changes in Trade and Employment in the Major Industrial Countries, 1970-76*, in Human Resources, Employment and Development, Vol. 3, Edited by B. Weisbrod and H. Hughes, St. Martins Press, New York, 1981.
- Department of Finance, *Economic Review*, Minister of Supply and Services, Canada, April, 1983.
- Economic Council of Canada, *The Bottom Line: Technology Trade and Income Growth*, Minister of Supply and Services, Canada, 1983.
- Fallows, J., *America's Changing Economic Landscape*, The Atlantic Monthly, March 1985.
- Foot, D.K., (editor), *Public Employment and Compensation in Canada: Myths and Realities*, Institute for Research on Public Policy, Butterword & Co. Ltd.

- Freeman, R.B., *An Empirical Analysis of Fixed Coefficient Manpower Requirement Models*, 1960-70, Journal of Human Resources, Vol. XI, no. 20, Spring, 1980.
- Helliwell, J.F., *Stagflation and Productivity Decline in Canada, 1974-82*, The Canadian Journal of Economics, May, 1984.
- Jorgenson, D.W., *Energy Prices and Productivity Growth*, Harvard University mimeo, 1981.
- Kuttner, B., *The Declining Middle*, The Atlantic Monthly, July, 1983.
- Lawrence, R.Z., *Can America Compete*, Brookings Institute, Washington, D.C., 1984.
- Magun, S., *The Rise of Service Employment in the Canadian Economy*, Relations Industrielles, Vol. 37, No. 3, 1982.
- Magun, S., *The Effects of Technological Change in the Labour Market in Canada*, presented at the Canadian Economies Association Meetings, Guelph, May, 1984, (mimeo).
- Oppenlander, K.H., *The Impact of Technical and Structural Change on the Structure and Employment of Manpower*, in Human Resources, Employment and Development, Vol. 2, 1980 (Proceedings of the Sixth World Congress of the International Economic Association), Edited by P. Streeten and H. Maier.
- Ostry, S., and M.A. Zaidi, *Labour Economics in Canada*, Third Edition, Macmillan of Canada, Toronto, 1979.
- Picot, G., *The Use of Fixed Coefficient Matrices to Related Occupation and Field of Study in Manpower Requirements Models*, Research Paper No. 2, Social and Economic Studies Division, Statistics Canada, 1982.
- Porat, M., *The Information Economy, Definition and Measurement*, U.S. Dept. of Commerce/Office of Telecommunications, OT Special Publication No. 77-12(1), 1977.

-
- Regional Industrial Expansion, (Statistical and Data Base Services), *A Study of Job Creation in Canada, 1974-82*, Government of Canada, Ottawa, 1985.
- Sats, R., *The Estimation of Biased Technical Progress and the Production Function*, International Economic Review, Vol. 11, No. 2, June 1970.
- Saunders, R.S., *Aid to Workers in Declining Workers*, Ontario Economic Council, Toronto, 1984.
- Stanbeck, T.M. et al., *Services: The New Economy*, Allanheld, Osmunpublisher, 1981.
- Standing, G., *The Notion of Structural Unemployment*, International Labour Review, March-April, 1983.
- Statistics Canada, *Aggregate Productivity Measures, 1982*, Catalogue No. 14-201, Minister of Supply and Services, Canada, 1983.
- Statistics Canada, *The Input-Output Structure of the Canadian Economy 1961*, Catalogue No. 15-501, Occasional, The Queen's Printer, 1969.
- Statistics Canada, *Employment Creation in Canada: A Longitudinal Assessment of Industry, Firm Size and County of Control, 1978-1982*, Statistics Canada Catalogue No. 18-501, 1986 (forthcoming).
- Statistics Canada, *Job Severance and Unemployment Insurance Claims by Industry, Firm Size and County of Control of Former Employing Firms, 1980*, Statistics Canada Catalogue No. 18-503, 1986 (forthcoming).
- Stoneman, P., *The Economic Analysis of Technological Change*, Oxford University Press, 1983.

1170001

